VOLUME XXIII NUMBER THREE

THE NATIONAL GEOGRAPHIC MAGAZINE

MARCH, 1912

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The Forgotten Ruins of Indo-China JACOB E. CONNER
With 63 Illustrations and 2 Maps

The National Geographic Society
Illustrated

American Discoverers of the Antarctic Continent MAJOR GENERAL A. W. GREELY, U. S. ARMY
Illustrated

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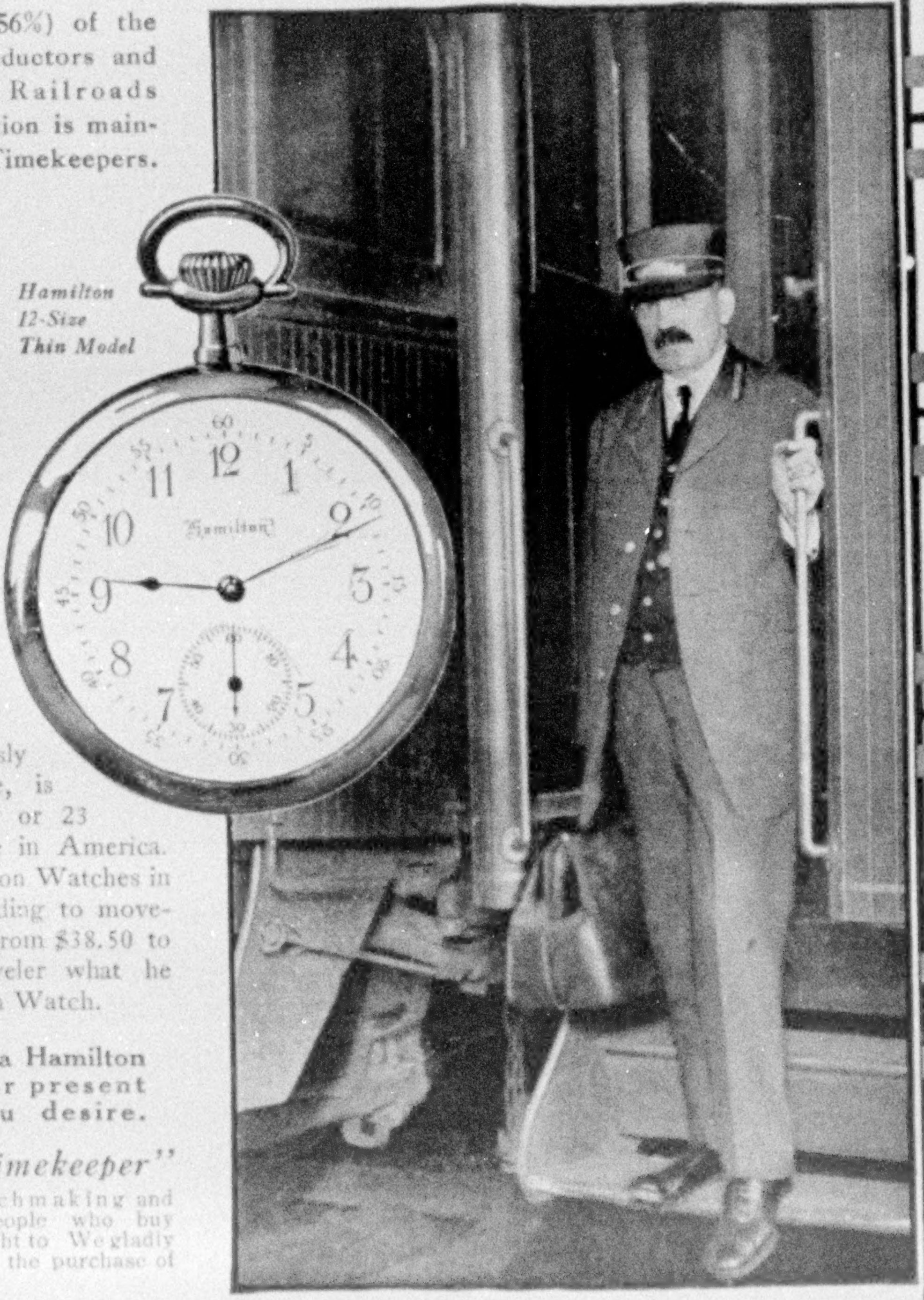

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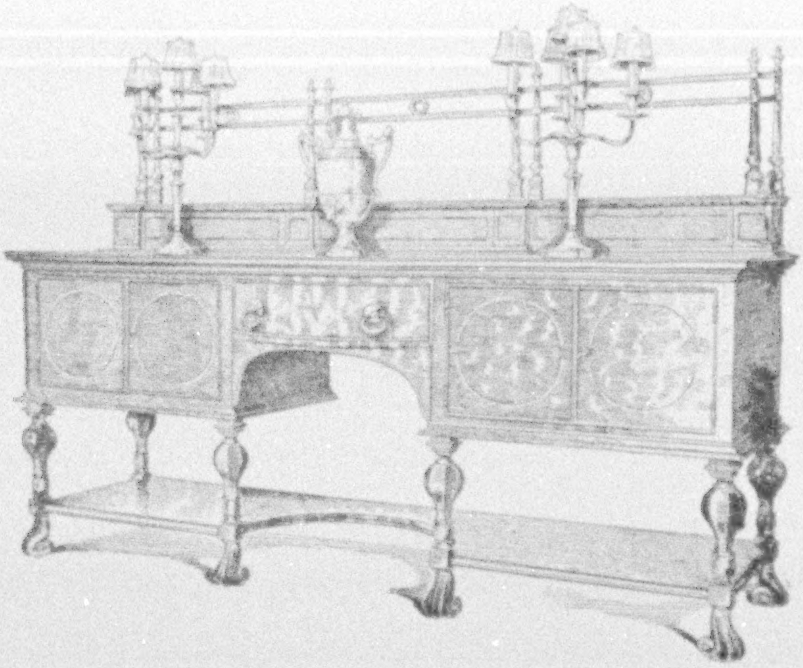

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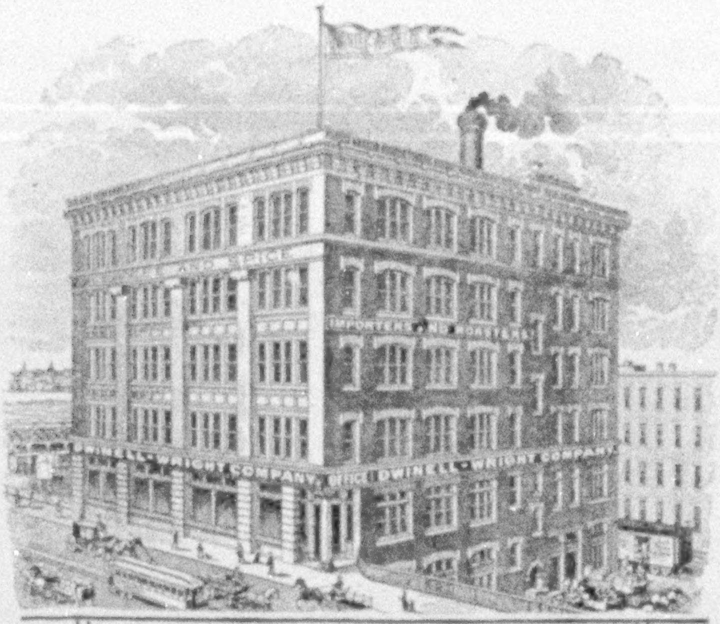

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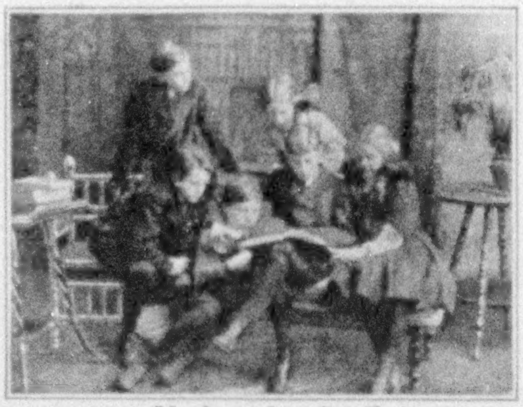

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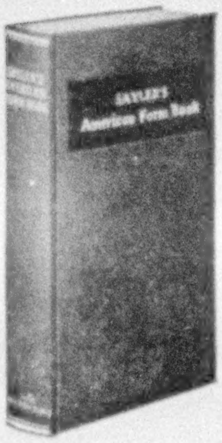

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Vol. XXIII, No. 3 WASHINGTON March, 1912

THE NATIONAL GEOGRAPHIC MAGAZINE

THE FORGOTTEN RUINS OF INDO-CHINA

The Most Profusely and Richly Carved Group of Buildings in the World

By Jacob E. Conner

American Consul at St. Petersburg; Formerly American Consul at Saigon, Cambodia

OUTSIDE of the Siamese and Cambodians, very few people have heard of Angkor, or know that such a nation as the Khmers ever lived, conquered, worked, and perished from the face of the earth. In America, even now it is doubtful if there are many who have heard of Angkor Tom and Angkor Wat, so completely have these splendid ruins been hidden in the Cambodian jungle and kept from civilization by natural barriers.

Up to recent years not many travelers ever visited Angkor, and some of those who did never returned to tell the story, for the country has been from time immemorial inhospitable to strangers. It is said that the Romans sent an envoy in the time of its greatest activity. The Chinese have from time to time sent envoys and made treaties, and have left the earliest descriptions so far discovered and deciphered. Marco Polo mentioned the place, but did not see it.

The Dutch, in the 16th century, sent an ambassador, and the natives assassinated him. Later the Portuguese and Spanish visited them; but the country remained a mysterious and forbidden land, the thrall of Siam for many years. Then the French came, in the middle of the last century, and the geographical limits of the protectorate of Cambodia have been but recently defined.

During the long centuries of their isolation and seclusion, these buildings have remained in an unusual state of preservation. And still they keep their secret, in spite of all the books and treatises that have been written, for the language of their builders is undeciphered. But if the mystery of their origin appeals to the imagination and spurs the archeologist to solve their riddle, the artist and the architect will be no less interested when the beauty of their structure and decorative detail are laid before them; and these, fortunately, need no interpreter.

There are no roads to Angkor—none but a wretched bullock-cart road, beginning at the river, some three or four miles away, and ending at the ruins. From the outside world there is no feasible means of approach except by water, and this is attended with some difficulty. An effective barrier is stretched across the way in the shape of a shallow lake. At the close of the rainy season, say from October 15 to December 15, this lake is deep enough to be navigable by steamboats. Under favorable conditions

OUTLINE MAP OF FRENCH INDO-CHINA, SHOWING THE LOCATION OF THE RUINS AT ANGKOR, CAMBODIA

this period may be extended two weeks earlier or two weeks later, but one is liable to be disappointed if he attempts the journey outside of these dates, and outside of the three months indicated it is utterly impracticable.

A trip anywhere must have a beginning, and this begins at Saigon, the capital of Cochin China, in the southeastern corner of the Asiatic mainland, because Saigon is the nearest practicable seaport. There are no hotels at Angkor, nor any place nor any people to provide you food or lodging. A rest-house is there, consisting of roof, floor, and walls, and that is all.

And that is why I started for the ruins one morning early in December with a steamer-trunk full of tropical clothing, a steamer-rug, a camp-bed, a Cambodian mattress (splendid thing for comfort), a supply of provisions, and a Chinese cook. A railroad journey of 44 miles brought me to the end of the line at Mytho. From this point the journey is up the broad Mekong River by steamboat for the next 24 hours; and you are not sorry when it is ended, either, for the accommodations are anything but luxurious.

The Mekong is one of the world's greatest streams; it is the one great river of the peninsula of Indo-China. If you follow it up far enough, you will find its headwaters not far from the great central plateau of Asia. In its middle course it is a magnificent stream, and in its lower it is another Mississippi delta, spreading out over and embracing the broad, flat plain it has created, and reaching the sea at last through a number of bayous and passes. A few years ago the crocodile and rhinoceros frequented its banks, but these have now retreated farther up-stream.

A sheet of yellow water a mile or so wide, fringed with cocoanut and arica palms; some banyans, bananas, and a tangle of liana vines; an occasional bird or two; a native sampan, a Chinese junk; patches of rice and acres of swamp land; no hills in sight to relieve the monotony—such is the vista of the first day's journey, which lands you at Pnom Penh, the modern capital of Cambodia.

An attractive little place is Pnom Penh, with well-paved streets—it takes the French to make good roads and keep them good—a gentle monsoon to cool the air; a few characteristic buildings of the Cambodian royalty, suggesting "a general flavor of mild decay"; a pagoda with a silver-plated floor and an absent-minded looking Buddha made out of glass, attended by a priestess clad in gold and glittering with diamonds; a "library" without a book in it; processions of Buddhist priests in bright yellow robes; natives in bright-colored silks and cottons; and, above all, the "Pnom" itself, a structure erected as a monument and possessing some lines of beauty that more than atone for its grotesque features.

His Majesty King Sisowath appears to have an easy, comfortable time of it, and that is the greatest desideratum to a sovereign whose sway is in the tropics. He is surrounded by a numerous *entourage;* he has his ministers and all sorts of supernumeraries, and can go through the motions of governing, draw his pay for it right royally, and still be free from any distressing consequences and annoying details. His minister of war has charge of his elephants, used now in his military parades rather than for warlike purposes.

The story goes that a few years ago, like any up-to-date sovereign, he felt the need of a navy for his admiral to command. A dismantled cruiser was kindly furnished him by the protectorate, and his majesty proceeded to pay a visit to the King of Annam. Returning from the visit, the whole royal party took to sampans, such as they had always been acquainted with, and the discredited cruiser was reduced to tugboat duty, and so returned to Pnom Penh convoying a whole fleet of sampans.

It is startling to hear a group of Cambodians talking and laughing together, especially after one has grown accustomed to the sound of Annamite and Chinese voices. The latter, being monosyllabic and tonal, cannot change the quality of tone without at the same time changing the meaning of the word, whereas European languages can modulate the tone at will, and are thus more flexible and expressive of feeling. When you hear the hum of Cambodian voices

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ROYAL PAGODA WITH SILVER FLOOR, AT PNOM PENH

This building stands within the palace grounds of King Sisowath, and, like all the more recent architecture of Cambodia, it shows Siamese influence

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PAGODA TO THE LATE KING NORODOM, AT PNOM PENH

This monument is a good illustration of very bad taste, strongly contrasting in this respect with the ancient works, portions of which are used in the composition. Kings, princes, and dignitaries devote a part of their fortune to building monuments like this. They thus acquire merit in the eyes of Buddha and gain their supreme reward of Nirvana. The pyramids at the corners of this pagoda are designed to receive the ashes of the donor or of members of his family.

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TOMBS OF THE BONZES (PRIESTS), AT THE PAGODA OF KING NORODOM

The size of the pyramid or tomb indicates the sanctity of the bonze whose ashes it contains

ANNUAL REGATTA AT PNOM PENH

The racing boats, or pirogues, resemble those shown in the bas-reliefs at Angkor, and are propelled, not by means of oars, but by vessels held in the hands of the rowers resembling shallow wash-bowls.

you realize the difference at once, and you look into those faces again, half expecting them to look familiar—but they don't.

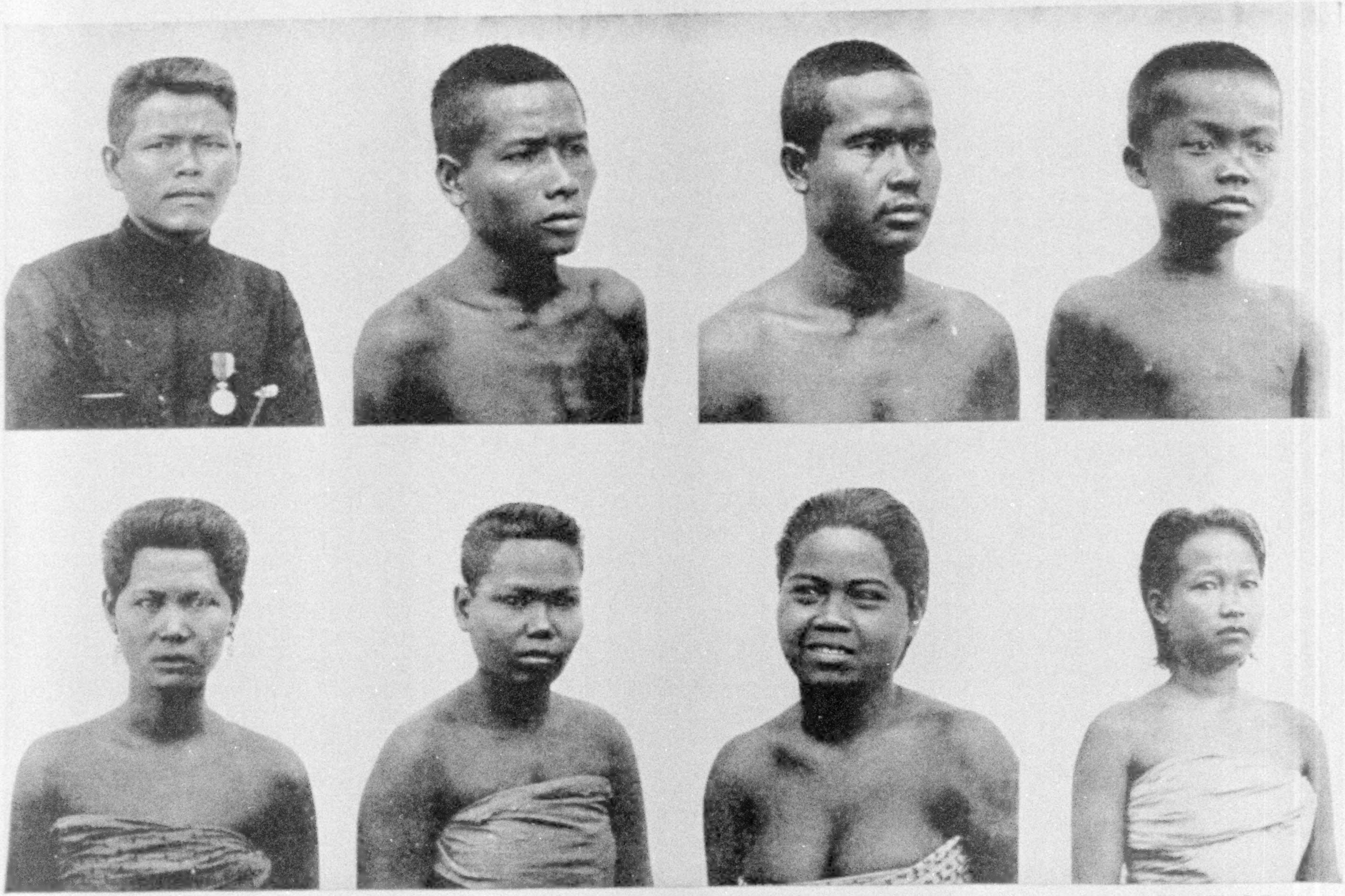
No; these people are at the meeting-place of the Aryan and Mongolian civilizations. Their language, religion, their entire civilization, is derived from the Hindu; but what races they themselves are derived from it would probably take a long time to enumerate, if one knew them.

At Pnom Penh we leave the Mekong and continue up one of its tributaries. It is really a tributary now, for the water is pouring down in a swift current from the lake, Tonle Sap, though a few months later it will be pouring the other way. Soon the scenery changes; the stream broadens, hills begin to appear on the horizon. We reach the village of Kompong Chnang.

We are told that Kompong signifies *anchorage*, and, looking at the map, we see that most of the villages are so designated. What does this mean? Why, it means that the villages are anchored, to be sure; for look at this one. Kompong Chnang is a floating village; not a lot of sampans fastened together and moving about, as they do at Canton, but houses—rather substantial looking, too—built, some of them, in European fashion and mounted on piles of bamboo laid flat in the water. The bamboo is a series of water-tight compartments joined end to end, and it floats like a straw. Over yonder is what appears to be a bridge, beginning somewhere right in the midst of the water and running off into the distance, probably searching for solid ground, which is pretty hard to find in this region.

Meanwhile the houses are all nodding and bowing to each other in pleasant, neighborly fashion, for all the world like the citizens of Saigon when driving on the Tour d'Inspection; and so we leave them.

Night descends as we enter the lake and steer toward the opposite end. Its waters are rapidly receding, and in a few



Dieulefils Collection

TYPICAL MEN AND WOMEN OF CAMBODIA

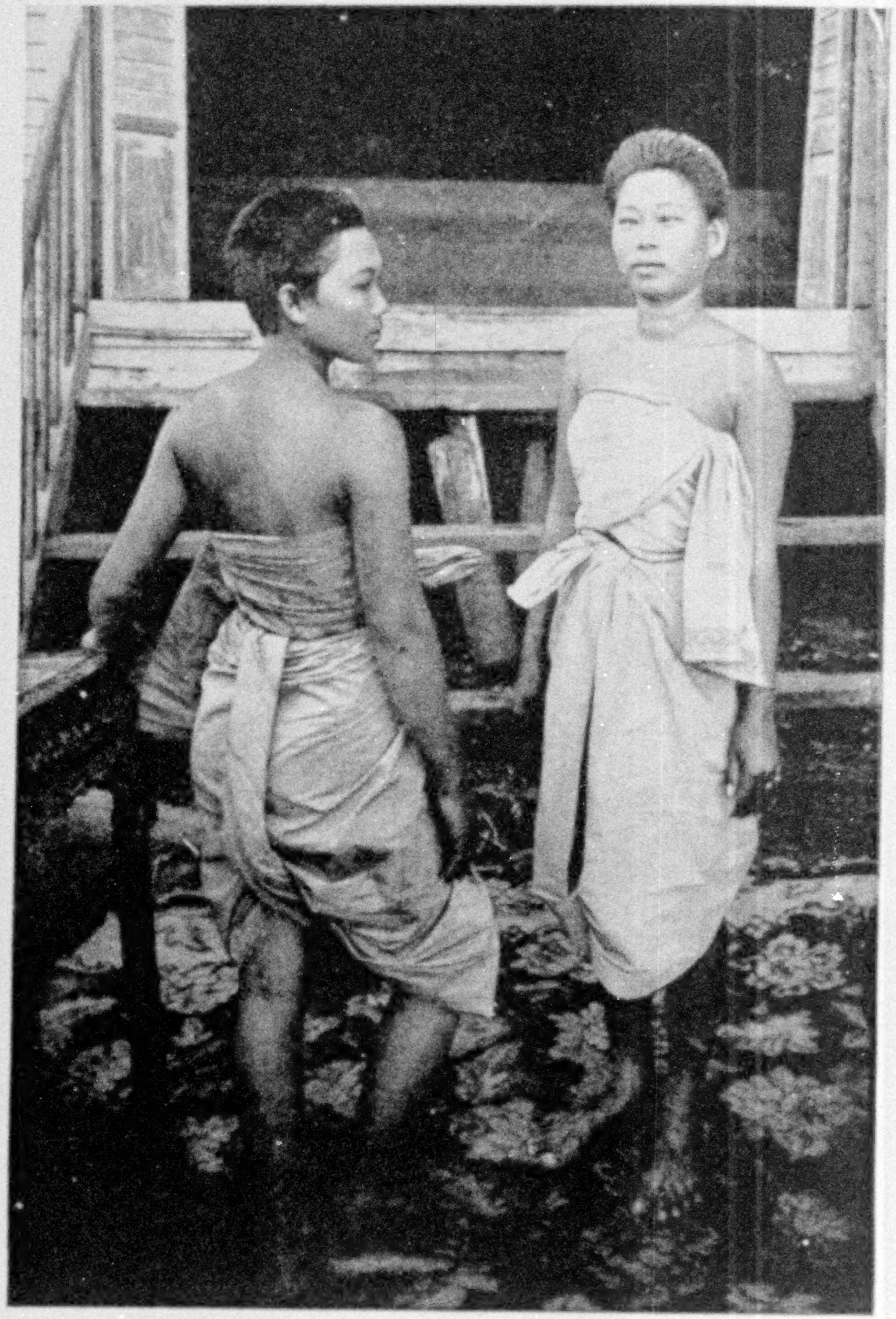
The people of Cambodia are a mixture of races—Malay, Annamite, and Chinese

CAMBODIAN TYPES, MOSTLY WOMEN

Note the sarong (skirt), modified in the Siamese fashion into something like trousers, and worn by both sexes

Dieulefils Collection

DANCERS OF THE ROYAL PALACE



Dieulefils Collection

CAMBODIAN WOMEN

Unlike the other peoples of Asia, the men of Cambodia take excellent care of their women, and do not allow them to perform any laborious work

more weeks it will be too shallow for even a sampan to navigate, though at its maximum season it has a depth of 20 meters. Seventy miles it is in length and 20 miles across, and a smooth and beautiful sheet to look at now; yet at the beginning of the rainy season it is only so many square miles of mud. At midnight we reach a point on the coast opposite the mouth of a little stream—at least, we are told that there is a stream there. All that one sees is the surface of the lake: a line of trees half of a mile away, apparently marking the shore, and the sampans ordered in advance waiting to take you to land; for this is where you leave the steamer and begin to depend upon your own supplies.

By one o'clock bag and baggage, including "Van," the indispensable Chinese cook, was transferred to the sampan and the two Cambodians rowed toward the line of trees. These showed at one point a narrow opening, and I now saw that the reason I did not see the little stream at first was because it was several feet beneath the surface of the lake. I discovered, too, that the line of trees was not the shore, but the edge of a submerged forest, and that there were five hours of rowing before we reached the little village of Siem Reap, where the bullock carts were waiting to continue the journey (p. 220).

CAMBODIAN MOTHER WITH INFANT

As every traveler knows, this is the method of carrying a child used throughout the Orient

It is a trip not soon to be forgotten, this voyage from midnight to morning through a submerged forest, with a full moon directly overhead in a clear sky. Once inside the outer line of trees, taller and stronger than their fellows, the ordinary forest features were reproduced—glades and clumps of trees, but the watery way everywhere. The rounded tops of the larger ones reached but 10 or 15 feet above the water, but they brandished their harsh and rustling foliage triumphantly. The smaller ones, still submerged, with no foliage to boast

Dieulefils Collection

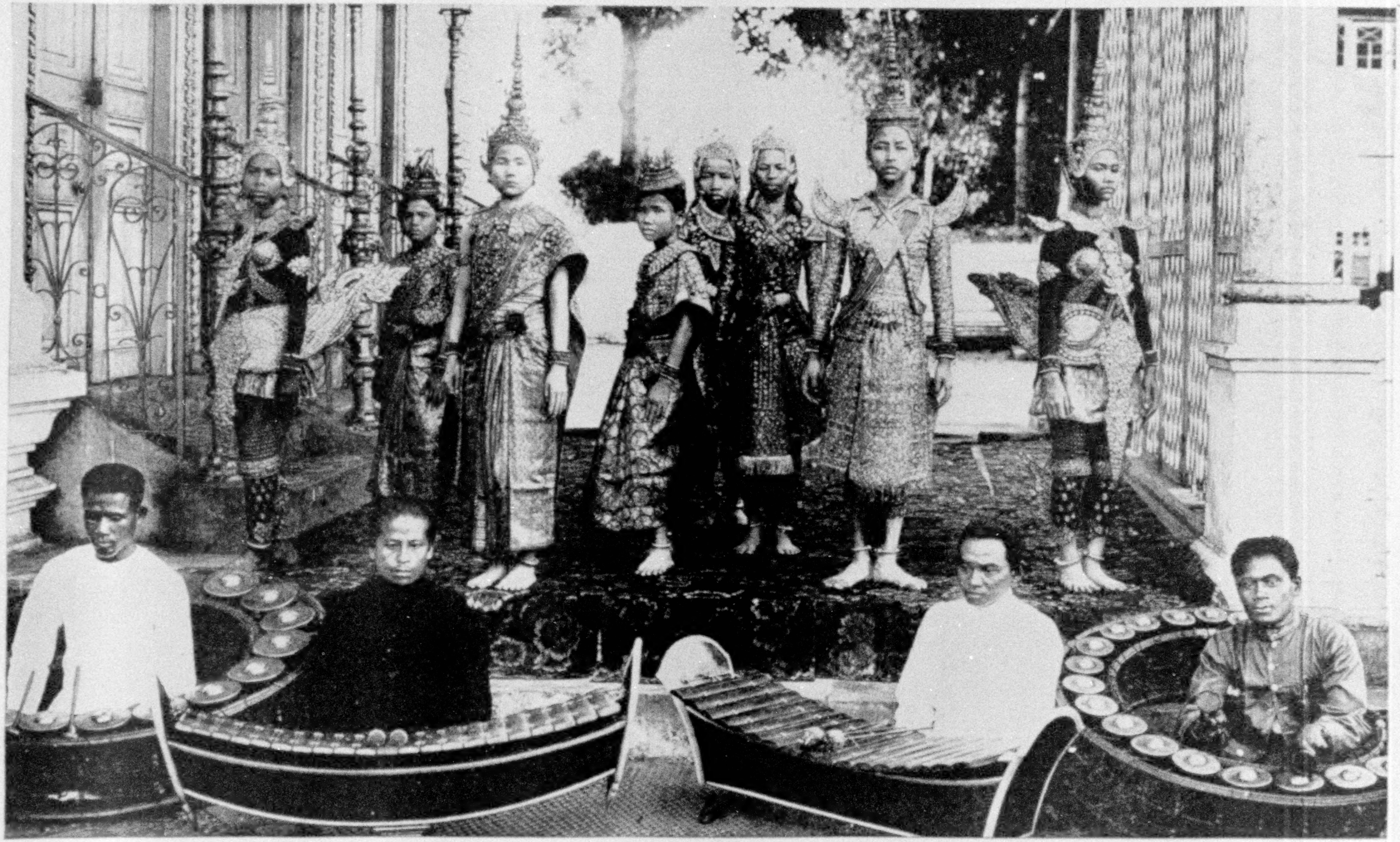
ROAD THROUGH CAMBODIAN FOREST

In the distance are the smooth, bare trunks of the flamboyant tree, or "flame of the forest." Other trees of this region are the teak, dipterocarpus, kapok, sao, tamarind, etc. The bullock cart in the foreground is the kind in common use. In the trees alongside every road are hundreds of monkeys. These animals are never harassed by the Cambodians, who have an almost religious respect for them. The monkeys pay no attention to passersby.

Dieulefils Collection

THE DANCES MOST POPULAR WITH THE KINGS OF CAMBODIA REPRESENT EPISODES IN THEIR HISTORY OR MYTHOLOGICAL SCENES FROM THE RAMAYANA

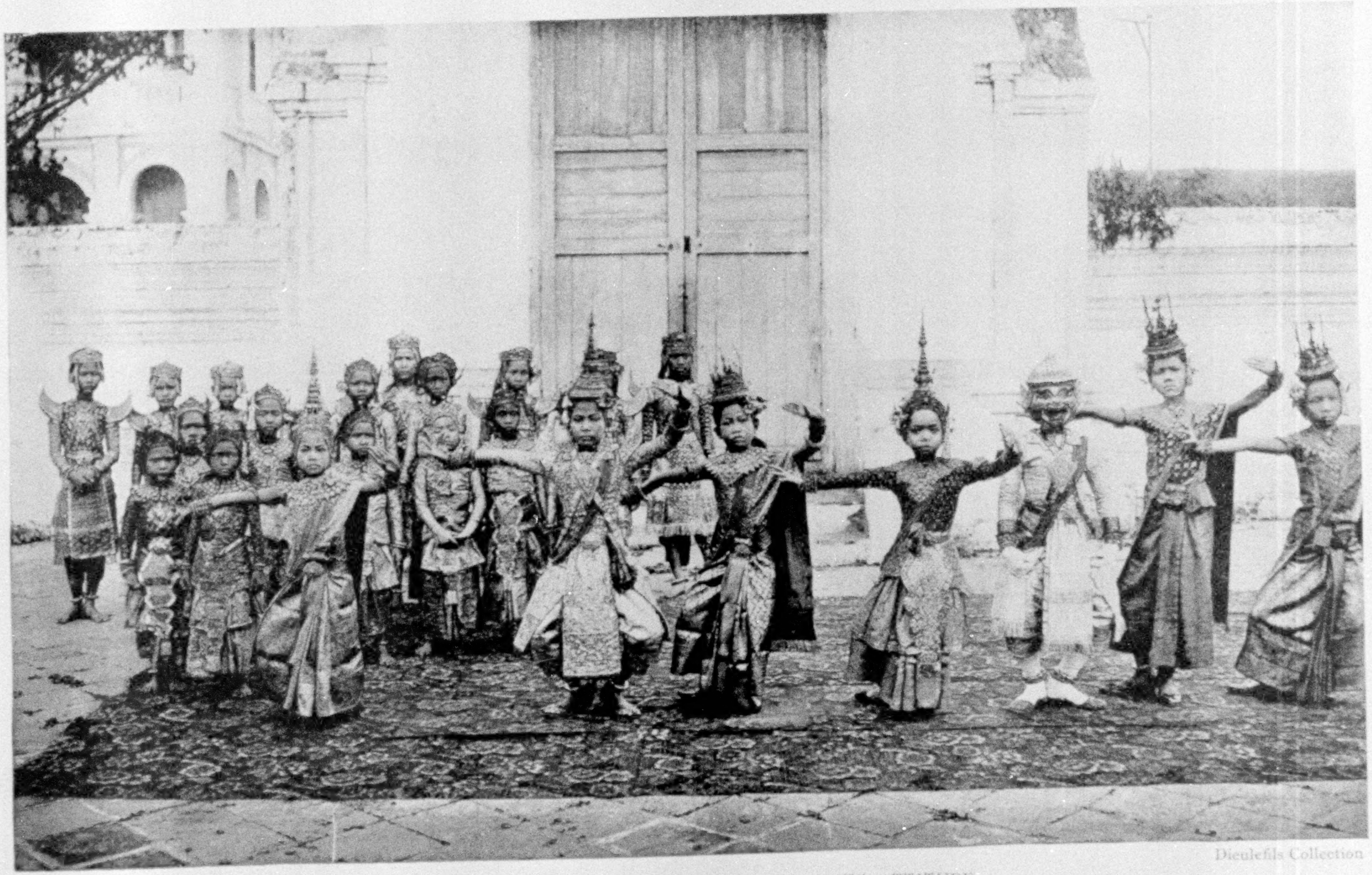
This picture represents the monkeys fighting the giant. Note the interested spectators in the background



Dieulefils Collection

DANCERS OF THE KING OF CAMBODIA PREPARING TO DANCE

The King of Cambodia at great expense maintains a large troop of dancers, as tradition requires the sovereign to maintain this evidence of his power and splendor. The dancers are chosen from the most beautiful women of the kingdom—those noted for their dexterity and grace, for the wealth of jewels which they can display, and for the richness of their dresses. Compare the bonnets to those on pages 240 and 249.



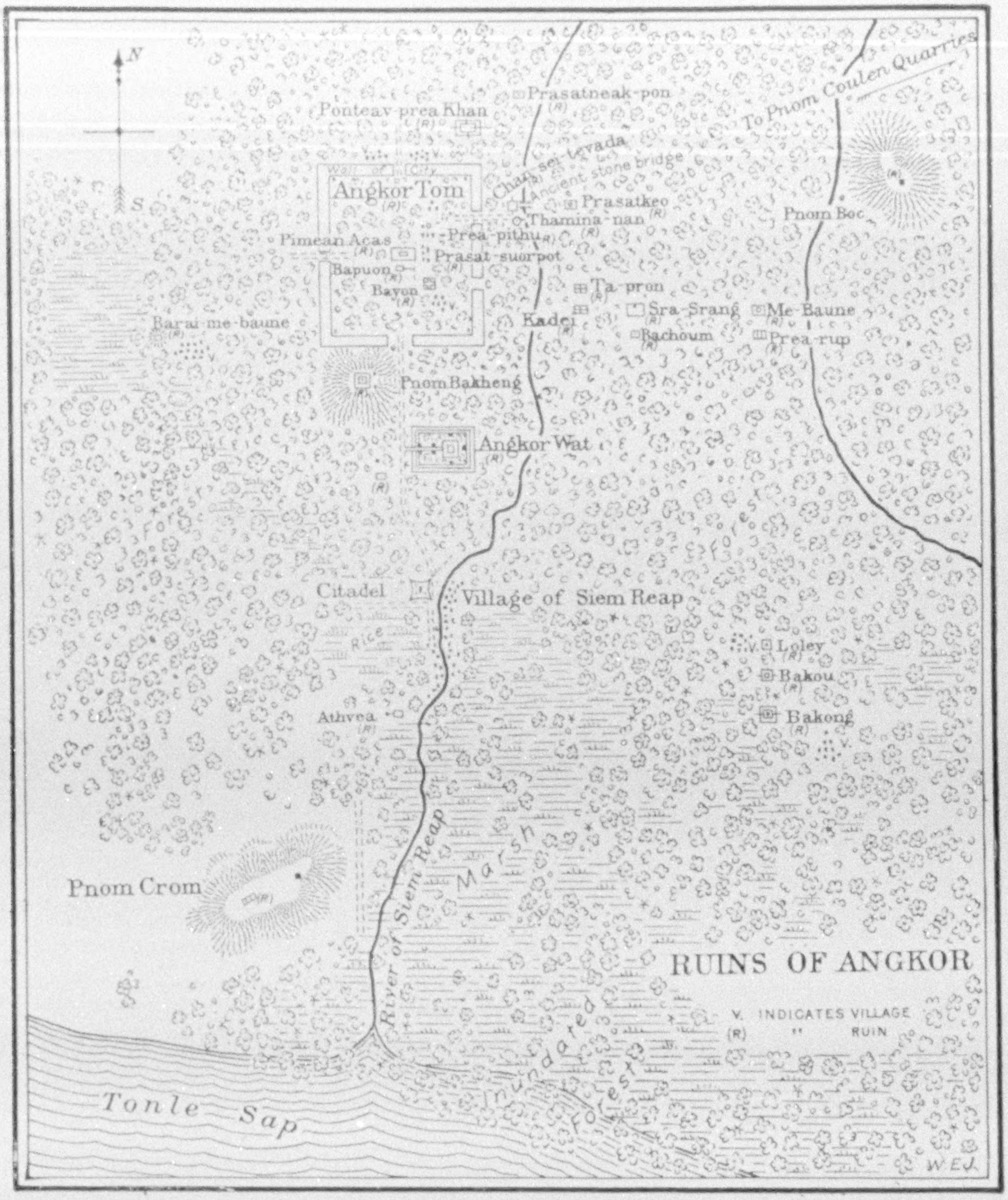
Dieulefils Collection

DANCERS OF THE KING IN THEIR FAVORITE ATTITUDE

Dieulefils Collection

BONZES (PRIESTS) VISITING THE VILLAGE TO RECEIVE ALMS

Every day the priests of the convent assemble and then visit the villages which support them. They are accompanied by the children of the most prominent men, who consider it an honor to wait upon the *bonzes* and to carry the basket in which the gifts, mainly rice, are deposited. All Cambodian boys must serve for a certain period, at least three months, in the convents of the *bonzes*.



OUTLINE MAP SHOWING RUINS OF ANGKOR: CAMBODIA

Angkor Tom, the capital city, and Angkor Wat, the temple, far outweigh in importance all the other ruins. However, at Loley, Me-Baune, Kompong-Chnang, Beng-Mealea, Bakong, and elsewhere there exist architectural and sculptural remains well worth noticing, as shown in a few illustrations herein presented. The writer desires to acknowledge his indebtedness for the illustrations almost wholly to two collections: Dieulefils, in which the architectural view predominates, and Fournereau, where decorative detail is best shown.

of, rasped against the sides of the sampan like a drowning thing struggling for the surface, and threatening to capsize the boat.

It was a scene of weird and fantastic beauty, with the triumph of the trees as its dominant note. With only a few short months during the dry season when they could be entirely above water, they were courageously invading the sea, adapting themselves to their novel situation and waiting for it to become dry land.

A BUDDHA WITH MANY ARMS AND AN UNUSUAL HEAD-DRESS: ANGKOR WAT

Dieulefils Collection

HEAD OF A GIANT WHO HAD MANY FACES

BUDDHA'S FOOT, AT ANGKOR WAT

THE NAGA, OR SEVEN-HEADED COBRA, THE FAVORITE DESIGN AT ANGKOR WAT

This is found in connection with practically all the ruins, usually as here, for a balustrade finial

Dieulefils Collection

THE APPROACH TO THE FRONT OF THE TEMPLE: ANGKOR WAT (SEE PAGE 228)

From the entrance a stone causeway leads up to this point, where the steps mount to the level of the outer gallery

And it will become dry land eventually. By daylight one can see for many miles the summit of Pnom Crom, situated on the very margin of the lake, utterly destitute of trees, its brown sides fissured with deep gullies and looking very much like an enormous sugar-loaf slowly dissolving. Looking about the country one may see other "pnoms," or eminences, likewise melting into the lake; so the day of the triumph of the trees is at hand.

These causes afford some solid basis of fact for the Cambodian fish stories, for the lake is undoubtedly a natural fish trap. As its waters recede, at the end of the dry season, the fish must needs crowd up into the shallow little streams that feed it. A few crumbs of bread thrown upon the water brought swarms of minnows around the sampan; but this also brought such grunts and whines of disapproval from the Cambodian oarsmen, to see good bread squandered on fishes, that the remainder of the loaf went to them.

They even laid aside their home-made cigarettes while they ravenously devoured the dry bread. I offered each of them a cigar with a colored paper label around it. The poor fellows removed their hats, tucked them under their arms, and advanced reverently with bowed heads and extended palms. Excess of gratitude could do no more.

It was broad daylight when I reached Siem Reap, after rowing and poling the boat for five hours through mud, water, and mosquitoes; then an hour and a half of jolting in a bullock cart, and there through the trees were the towers of the temple of Angkor Wat.

The first glimpse one gets of the ruins is when a rounded tower appears through the trees a mile or so distant, just a moment, and then no more till you are there. It is Angkor Wat, the most recent, the best preserved, the most classic and ornate of them all, though not the largest. There are many others scattered about this wide plain, including Angkor Tom, only a mile away; but these are all ruins, indeed, while the wat might still be called a building.

Standing in front of the temple grounds (the word *wat* means a temple), you see a moat some 30 rods wide surrounding the premises like a medieval castle, and crossed by a stone causeway leading to the main entrance. This entrance is itself a massive tower, flanked by two others only a little smaller, set in the inclosing wall. The whole inclosure is 800 by 1,000 meters, and its area is therefore 176 acres. Passing through the entrance, you see the elevated stone causeway, flanked by several small temples, leading up to the wat in the distance.

At a distance you get the effect of lateral magnitude only, for the entire structure or group of structures is sitting flat on a level plain, unaspiring and almost uninspiring. Had it been placed upon an eminence, and there is one not many rods away—but what's the use? The builders no doubt had their reasons, and they can't give them now.

It is not a little surprising, however, to look at the central tower and hear that it is actually 65 meters, 213 feet, from its summit to the level of the plain.

It is not till one enters the galleries and begins to measure distances relatively therefrom that the grandeur and impressiveness of the conception begins to make itself felt. Those same rounded towers now spring aloft, and the inner temple itself is raised above a surrounding gallery, which is in turn terraced above an outer and surrounding gallery, till the roof of the latter is on a level with the base of the former. These two encompassing galleries and the cruciform temple building proper within them are the main details in the ground plan of the wat.

The material used throughout in the construction is a grayish sandstone which the French call "grès." It much resembles marble in closeness and fineness of grain, and it stands weathering admirably. Where portions of the decorative detail had been affectionately caressed and stroked by admiring hands, the stone is as smooth as polished marble. The effect of the color is certainly as somber as could be conceived, and to see it in ruins is painfully suggestive of the grayness of death.

Dieulefils Collection

THE BEST VIEW OBTAINABLE OF THE CENTRAL TEMPLE OF ANGKOR WAT, SHOWING CENTRAL TOWER, 213 FEET HIGH, IN THE DISTANCE, AND THREE OF THE FOUR CORNER TOWERS

Inside and outside, and from top to bottom, it is a mass of carving (see page 247)

Dieulefils Collection

STAIRWAY LEADING TO THE SANCTUARY OF THE CENTRAL TOWER: ANGKOR WAT

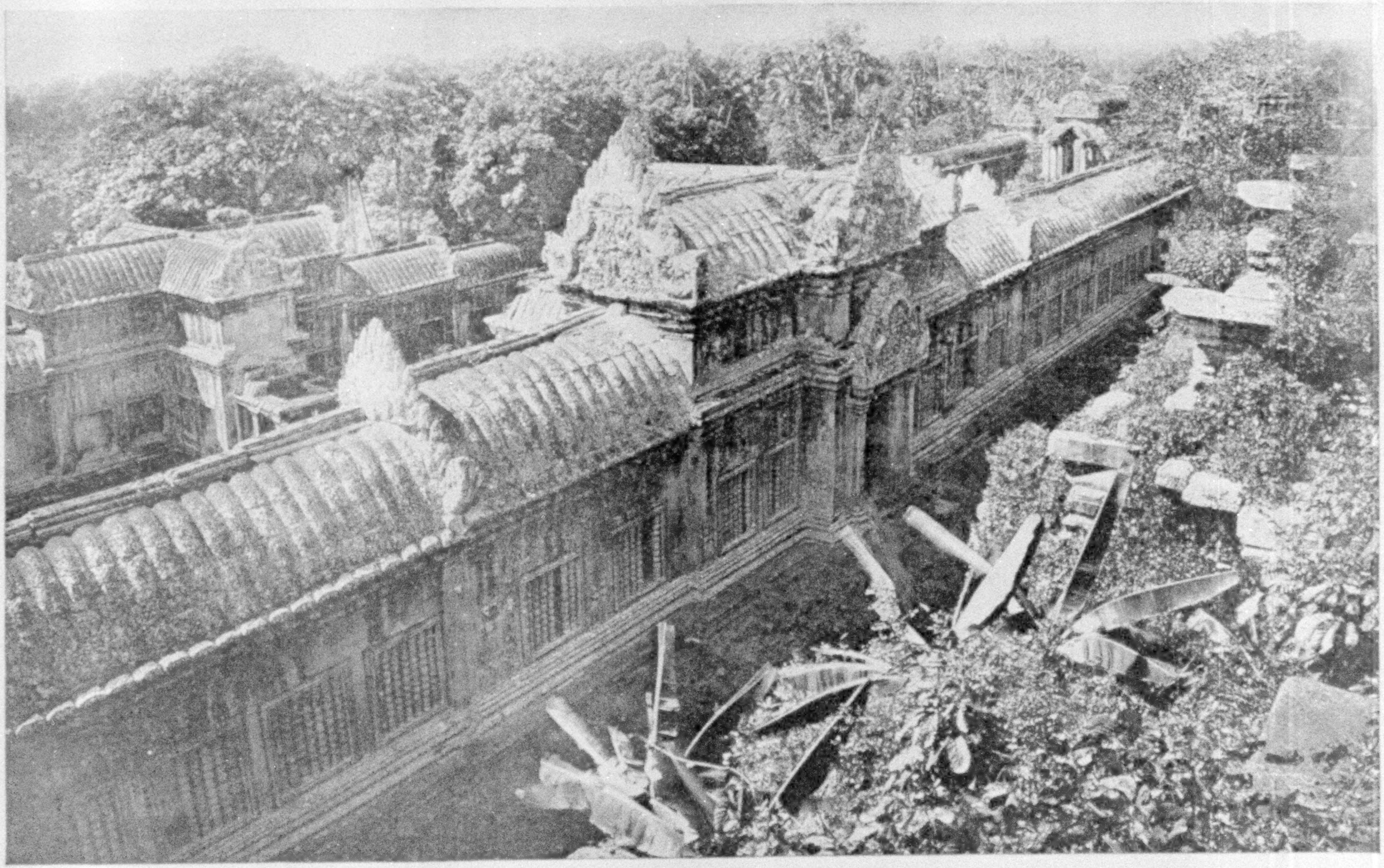
It is twelve meters (40 feet) from bottom to top of stairway. The steps are unusually high and very narrow, so that climbing them is not only difficult but dangerous. Note the four carved figures in the left foreground and the delicate tracery carved above them. Almost every square foot, outside and inside, of this temple bears some exquisite design, carved in stone.

And all of these tons upon tons of stone were brought from Pnom Coulen, nearly 19 miles away. How, overland? Impossible. If that submerged forest could tell its own history we should probably hear of a time when both Pnom Coulen and Angkor were situated upon the margin of Tonle Sap and the stone-barges went to and fro between them. But that triumphant forest, having driven back the sea, has made a malarial marsh near the ruins which is simply one of its weapons offensive.

Cambodians, of course, can stand it, and the flimsy shacks of the bonzes are clustered about the base of the wat to-day, keeping up the tradition of its origin as a Buddhist monastery. The droning of their voices sounds almost constantly on the hot, drowsy air, as they read and study aloud.

It is little heed they pay to the ever-

XUM



Dieulefils Collection

VIEW TAKEN FROM AN ELEVATED POSITION ON THE BASE OF THE CENTRAL TEMPLE

This view shows the roofs of the surrounding galleries, south side; also the tropical vegetation that has not yet triumphed over these noble works of man (page 247). Groups of carved figures (indistinctly seen in the picture) decorate the spaces between the bars in the windows. Every square foot, outside and inside, is covered with intricate designs.

Dieulefils Collection

A CORNER OF THE SECOND GALLERY, SURMOUNTING A BASE SIX METERS HIGH

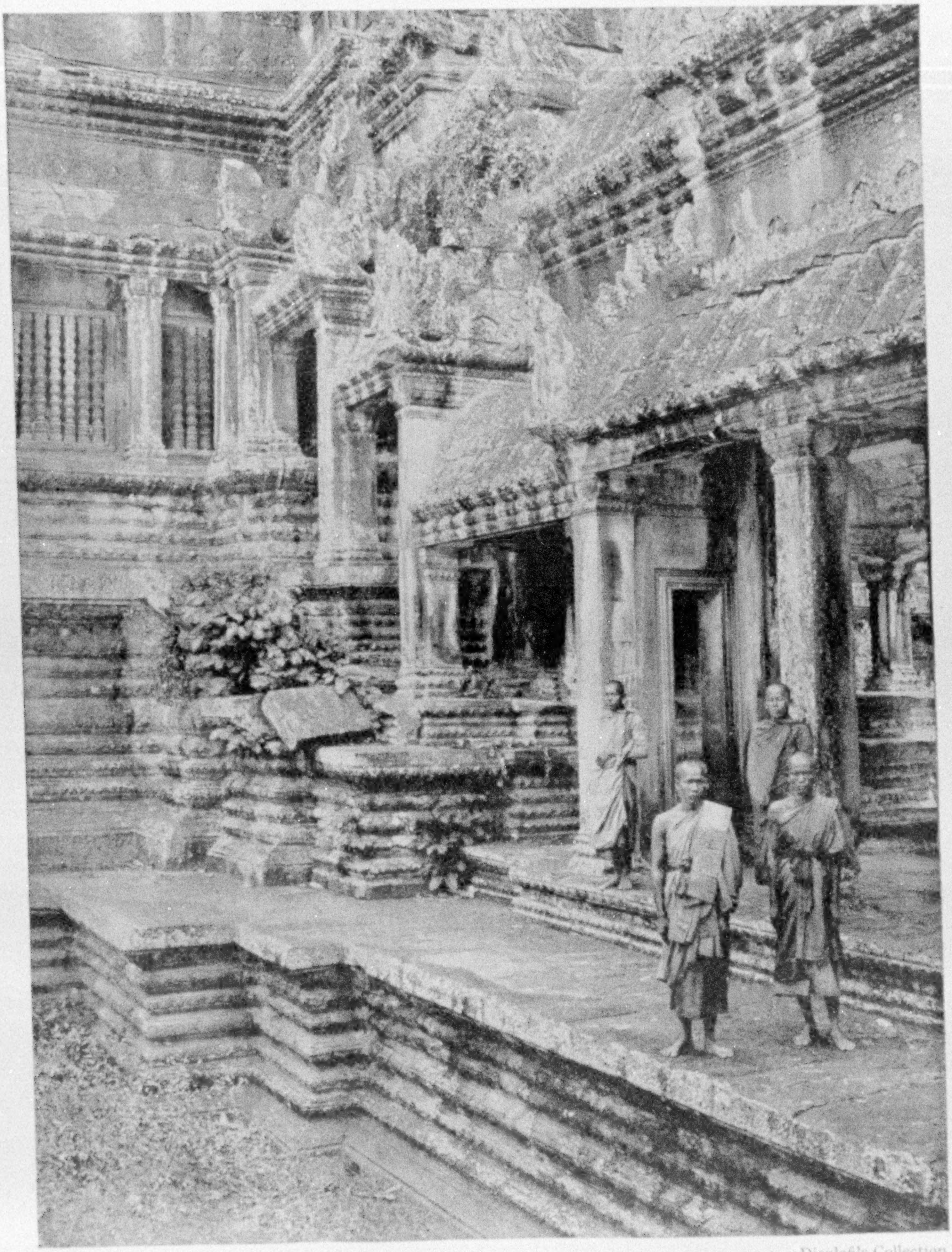
The rows of carved bars or columns conceal false windows, as the gallery is lighted from an interior court. The gallery contains numberless statues in stone or gilded wood, the better preserved of which still serve as objects of reverence to the faithful pilgrims. Note the four men in the right foreground and the rows of carved figures to their left.

Dieulefils Collection

DOORWAY OF THE SECOND GALLERY: ANGKOR WAT

Above are to be seen the coils of the naga (serpent) inclosing about fifty of the heroes of the Ramayana

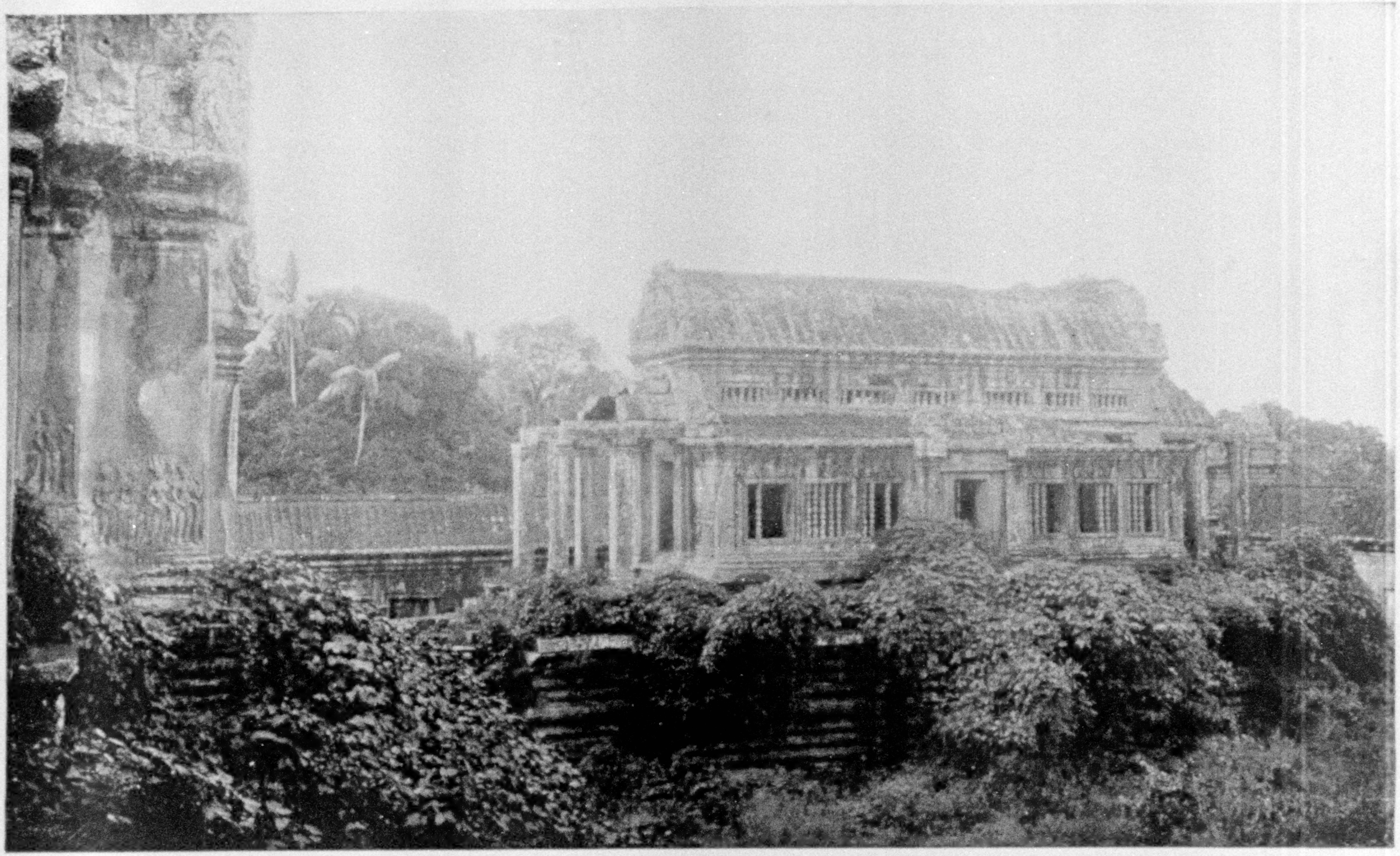
XUM



Dieulefils Collection

SOME CAMBODIAN BONZES ON PILGRIMAGE TO THE GREAT TEMPLE OF ANGKOR WAT

They come in their long yellow robes from all Siam and Cambodia, and the monotonous droning of their voices as they read aloud increases rather than diminishes the lonesomeness of the place.



Dieulefils Collection

SMALL TEMPLE SITUATED INSIDE THE INNER GALLERY, BUT DISTINCT FROM THE MAIN TEMPLE

The roof of the inclosing gallery and the side of the great temple are shown. Outside of and below the gallery is the outer gallery. Each gallery is quadrilateral, surrounding the main temple, and its inner walls are covered with bas-reliefs. Another view of this temple is shown on page 237.

Dieulefils Collection

ANOTHER VIEW OF THE SMALL TEMPLE

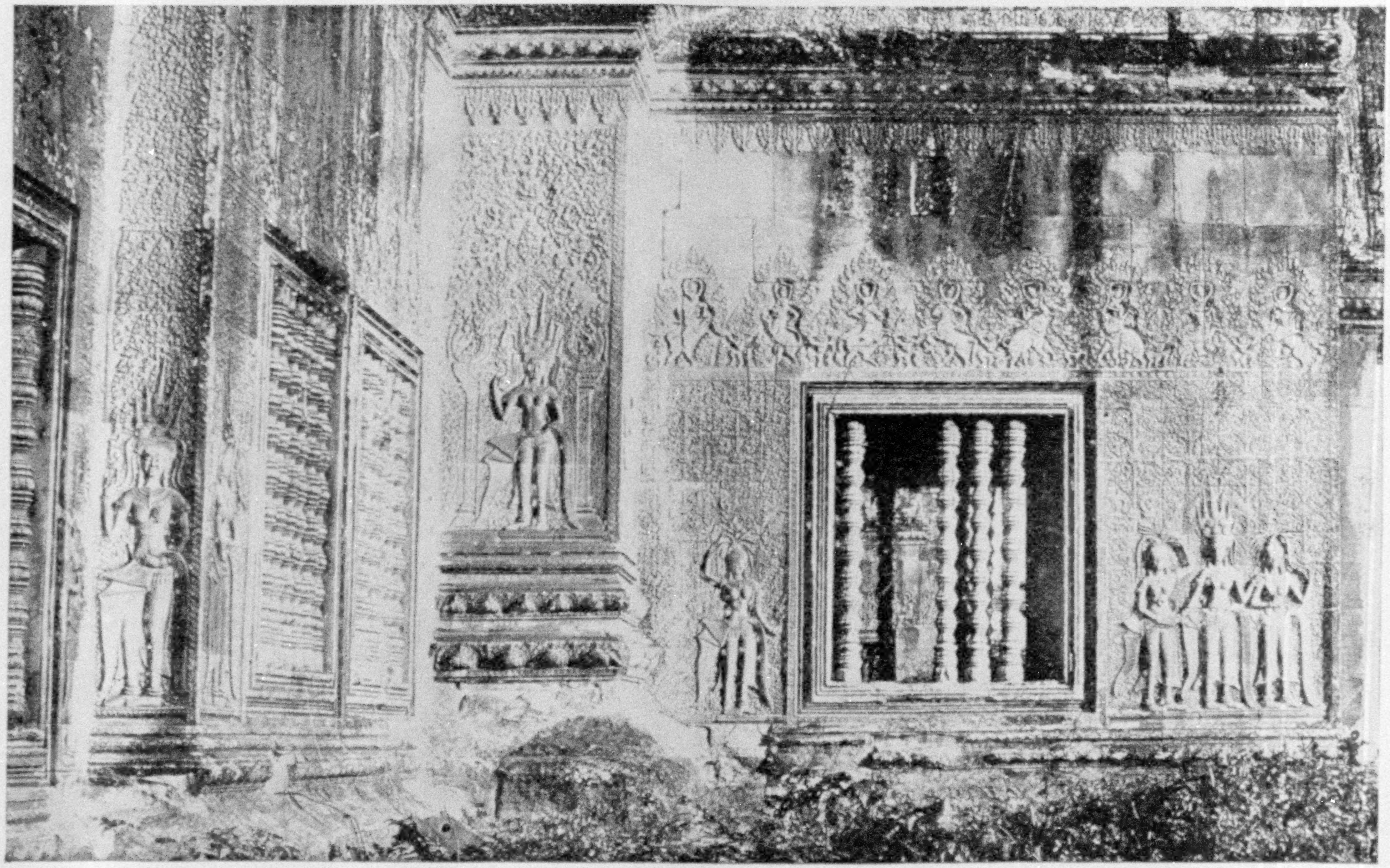
Note the richness of carving extending to the very top of the building

XUM

Dieulefils Collection

PORTICO AND PERISTYLE OF THE CENTRAL TOWER: ANGKOR WAT

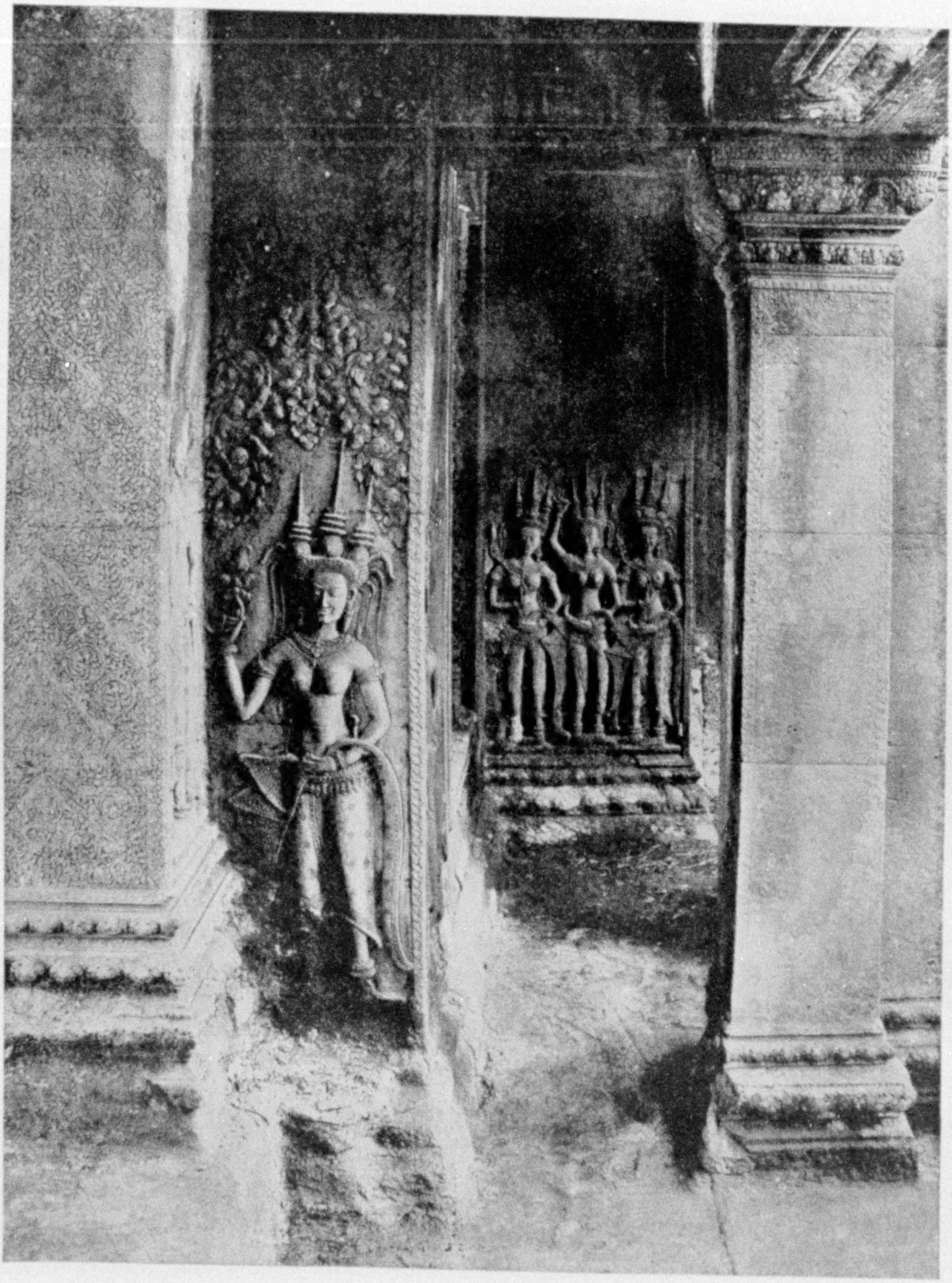
It is remarkable that this lavish decoration has so well withstood the weathering of the torrential rains for something like eight hundred years. From end to end the walls of the galleries are covered with these marvelous friezes.



Dieulefils Collection

DETAIL OF THE PRECEDING VIEW FROM A DIFFERENT ANGLE

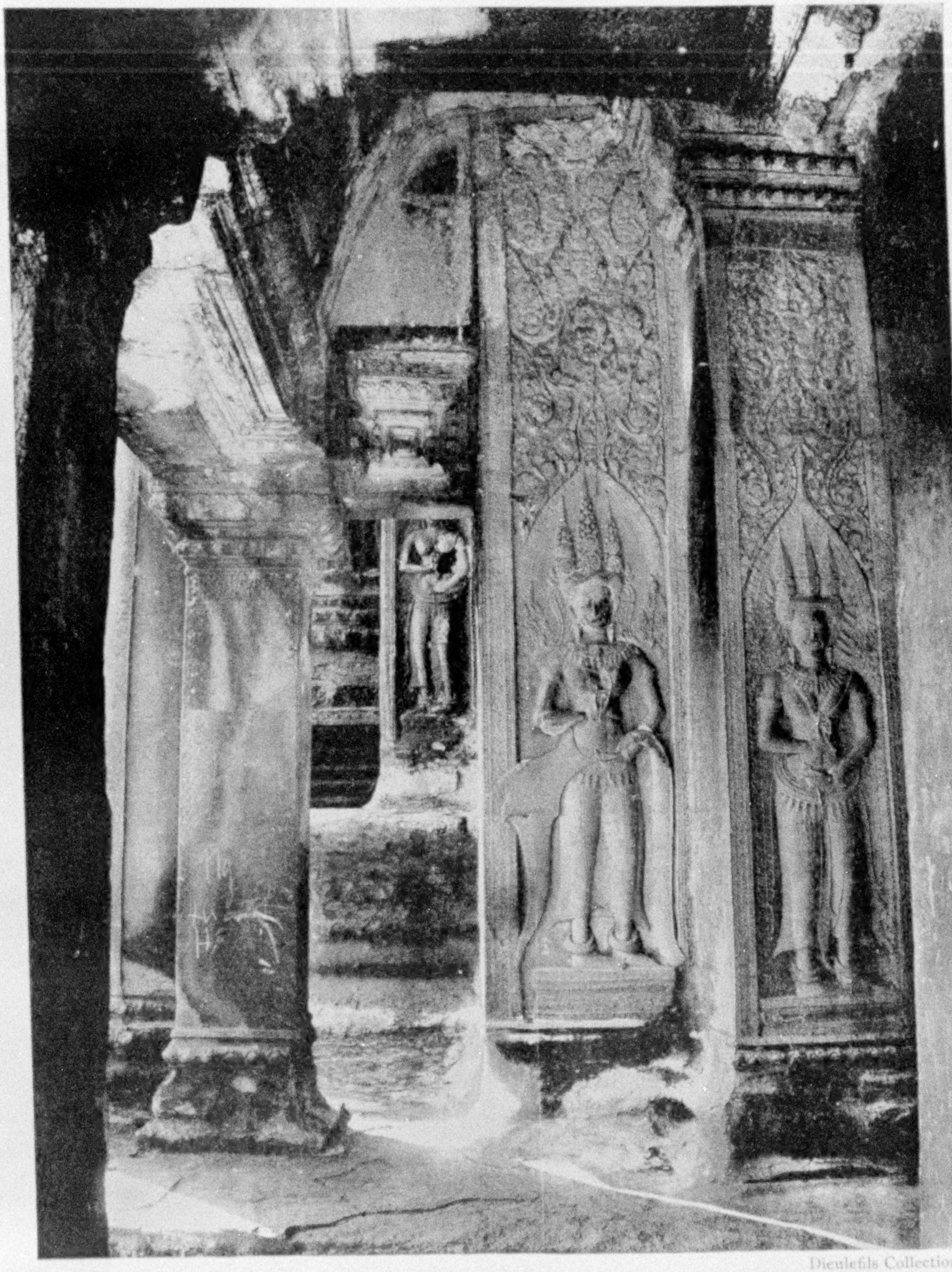
The bars in the windows appear to be a conventionalized abacus or counting frame, such as one sees in all the Orient. They are made of the same gray stone used throughout in the structure of the temple. Note the warriors astride horses, elephants, etc. (see pages 246 and 247)



Dieulefils Collection

PILASTERS, DEMI-VAULT, AND LINTEL, ALL SHOWING THE USUAL WEALTH OF CARVED STONE: ANGKOR WAT

Every foot of the outer and inner walls of the galleries on every floor are richly decorated. Divine figures or *tevadas* abound. Most of these feminine figures are of superb expression and grace. Their rich head-dress is ornamented with jewels, the neck is decorated with necklaces, and the arms and ankles ornamented with richly carved bracelets. Many of the images are polished with the touch of generations of pilgrims (see also page 249)

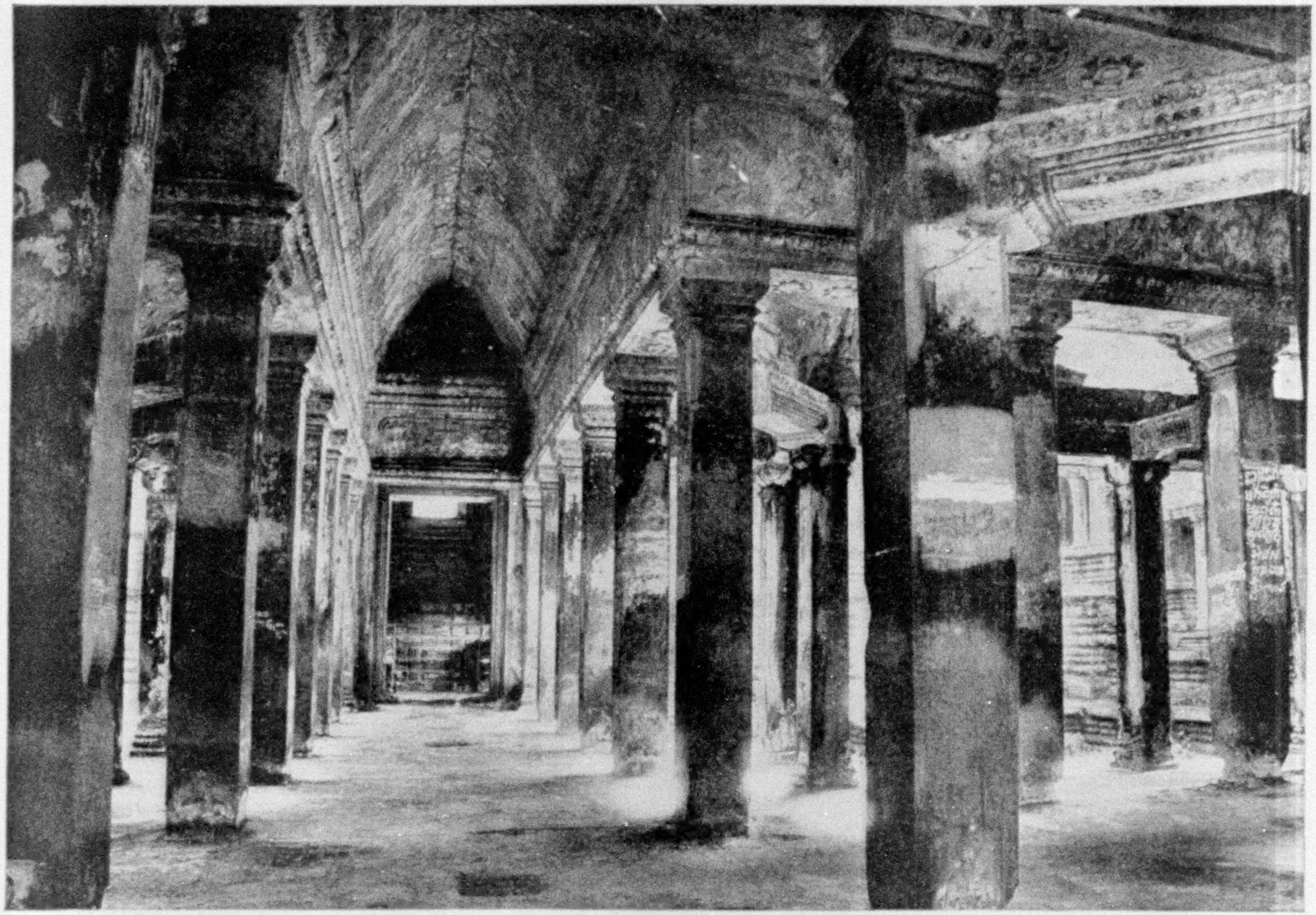


Dieulefils Collection

THE SAME KIND OF SITUATION SIMILARLY TREATED

The gates to the cloister in the central tower, where the Buddhist divinities are invoked every day, are decorated with pilasters, richly carved. Divine persons, the *tevadas*, carrying in their hands the lotus flower, are the most common images (see also page 249)

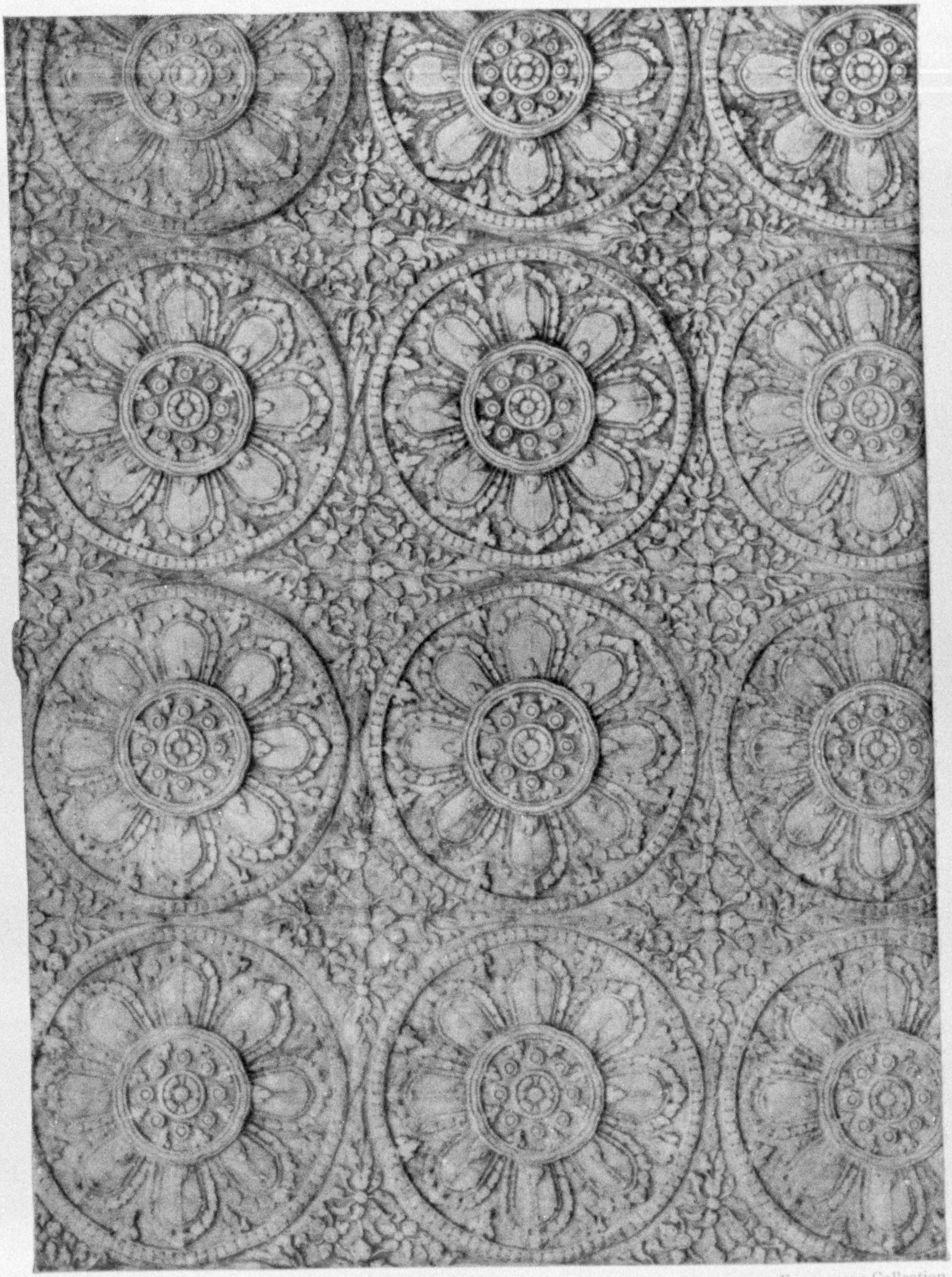
XUM



Dieulefils Collection

INTERIOR VIEW OF THE CRUCIFORM GALLERY, IN THE CENTRAL TEMPLE

All the columns shown in the illustration are monoliths, their bases being decorated with figures of old men, finely sculptured see page 246). Above the handsomely carved cornices are friezes of dancing women (see pages 244 and 245). The corbel arch was originally hidden from view by delicately carved wooden paneling, of which a portion may be seen in upper right corner (see page 243).



Fournereau Collection

A PORTION OF THE CARVED WOODEN CEILING OF THE GALLERIES

Its principal purpose was to conceal the corbel arch, which was not intended to be ornamental. Only a few pieces of this ceiling remain

THE HEAVENLY DANCERS: ANGKOR WAT

These designs occur frequently in the ornamentations of the temple. Ballet dancing is evidently not a modern art. The Cambodian court of the present day has its corps of ballet dancers who are said to preserve some of these ancient dances (see pages 222 and 223)

Fournereau Collection

ENTABLATURE IN THE CRUCIFORM GALLERY OF THE TEMPLE AT ANGKOR WAT, SHOWING THE FAMILIAR "HEAVENLY DANCERS," THE RICH DECORATIONS ABOVE, AND A PORTION OF THE WOODEN CEILING (SEE PAGE 243)

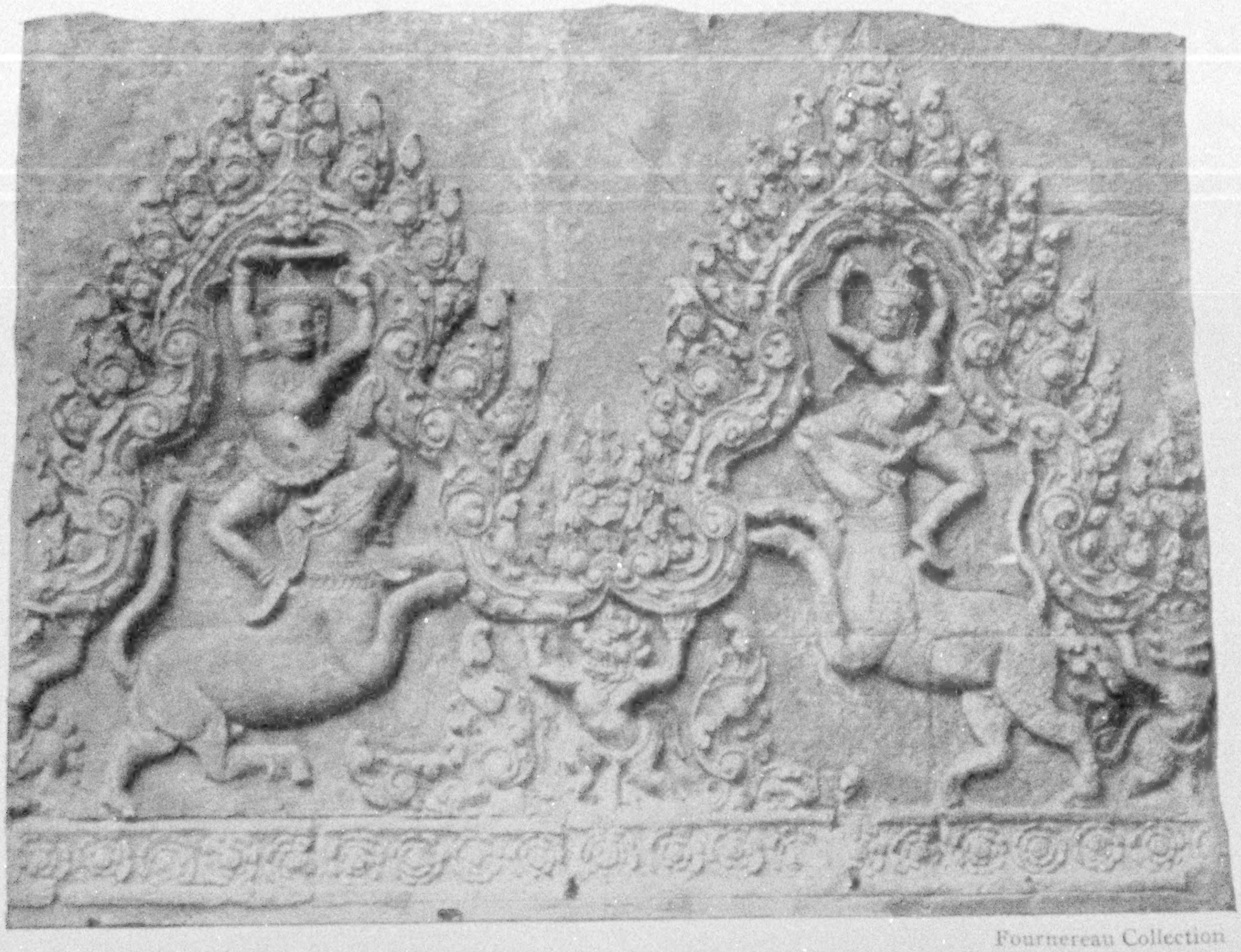
Fournereau Collection

PORTION OF A FRIEZE AT ANGKOR WAT, SHOWING A WARRIOR ASTRIDE A DRAGON

Fournereau Collection

DECORATION AT BASE OF THE PILLARS SUPPORTING THE GALLERIES

There are hundreds of these square pillars, the faces being decorated at the base just like the one above, and from the top downward with lace-work design (see page 242).



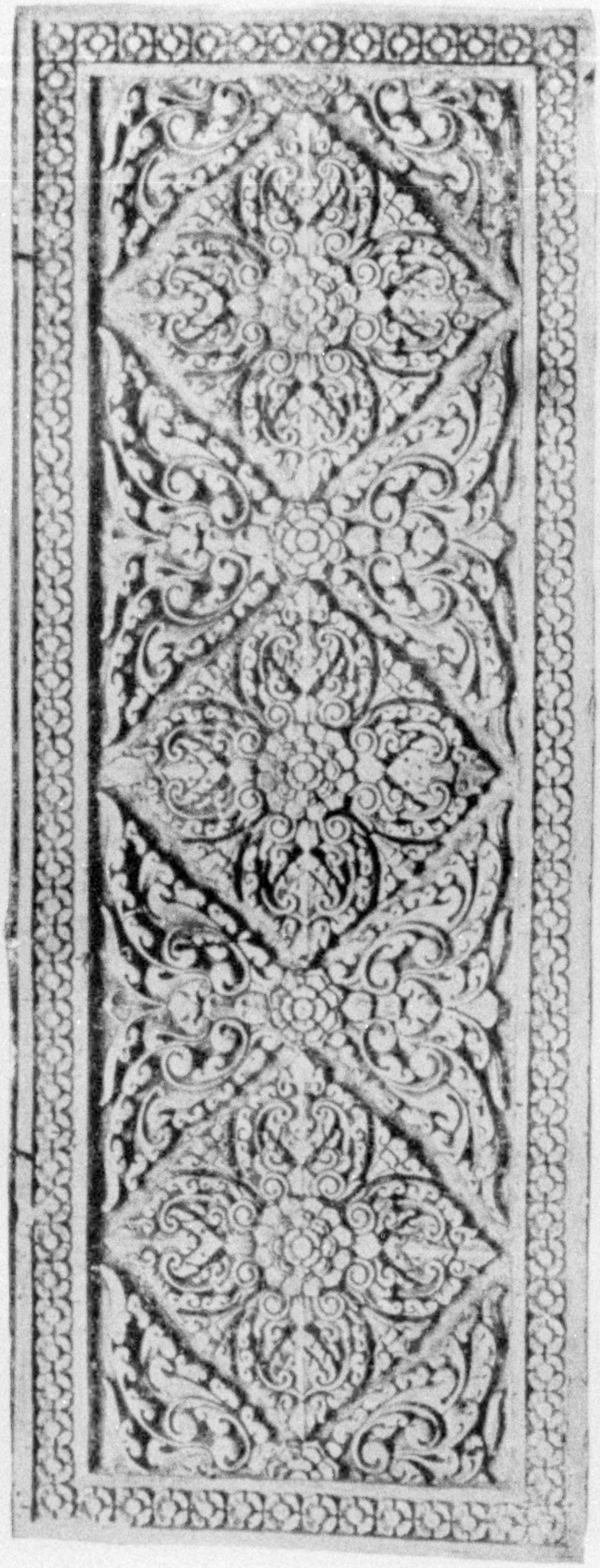
Fournereau Collection

ANOTHER PORTION OF THE FRIEZE IN THE SAME TEMPLE: ANGKOR WAT

wakeful plants, the grasses, shrubs, and trees that are constantly at work prying at the foundation stones and swaying the columns. Already there are piles of broken stone at the base of the walls, like the talus at the foot of a cliff, the outer decorations and unessential parts. The halls and corridors are in the main intact and need little more than cleaning to be made habitable. No wonder that with only the bonzes to look after the wat it has long ago been given up to bats and pigeons and filth—and silence. It is a silence so lonesome and deathlike in its isolation that one shudders in turning a corner to find himself confronted by a stony Buddha with uplifted hands, as if imploring him not to disturb the repose of the centuries.

If the mass of the structure is impressive, the amount of decorative work done upon it, to speak only quantitatively, is still more so. Inside and outside, and from top to bottom, it is a mass of carving in stone. A few blank spaces are to be found about the building, and these are generally in the main temple, reserved for the work of the greater artists who never came. Both the encircling galleries consist of a row of square columns on the outer side, an arch *en corbeille* above, and an inner wall with an entablature for the whole colonnade. And everything is decorated—the four flat faces of the columns, the walls, the entablature, and the wooden ceiling which formerly rested upon it, concealing the arch which is unornamented.

Around the base of the structure is a colonnade of clustered columns, which may have been added as an afterthought some centuries later. These much resemble the clustered columns of Moorish architecture, except that the channeling is not deep; and, furthermore, the capital much resembles the Byzantine. But for the rest, you see the square column everywhere, the same dimensions from top to bottom; long rows of them in the galleries, a cruciform colonnade of them on the terrace, or modified into pilasters when adjacent to doorways.



Fournereau Collection

JUST A PIECE OF STONE TRACERY AT ANGKOR THOM

FRAGMENT OF ONE OF THE ANGLES OF A LITTLE TOWER AT PIMEAN-ACAS

In the picture on the right, as in all of the work of these people, the treatment of the human form is much inferior to that of the ornamental detail to be seen on every side

The best specimens of the decorative art of Angkor are to be found upon these columns, especially those in the form of pilasters with the lintel above them. Indeed, it is doubtful if at its best it can be surpassed—let us say *often* surpassed, to be very careful—by the best that can be shown from classic remains. Just a few inches from the bottom is usually to be found a bearded Buddha, and above, a tracery in stone, the pattern of which is as delicate and graceful as fine embroidery.

The grotesque is sometimes employed on the exterior in the form of a modified façade, or pediment, over an entrance, the motif being sometimes a dancing figure, or more often an entanglement of monkeys. It is to be remembered that these decorative designs literally "crowd the canvas," with an evident purpose to leave no visible space unadorned. True, many of the designs are repeated over and over, but the number and variety are nevertheless amazing.

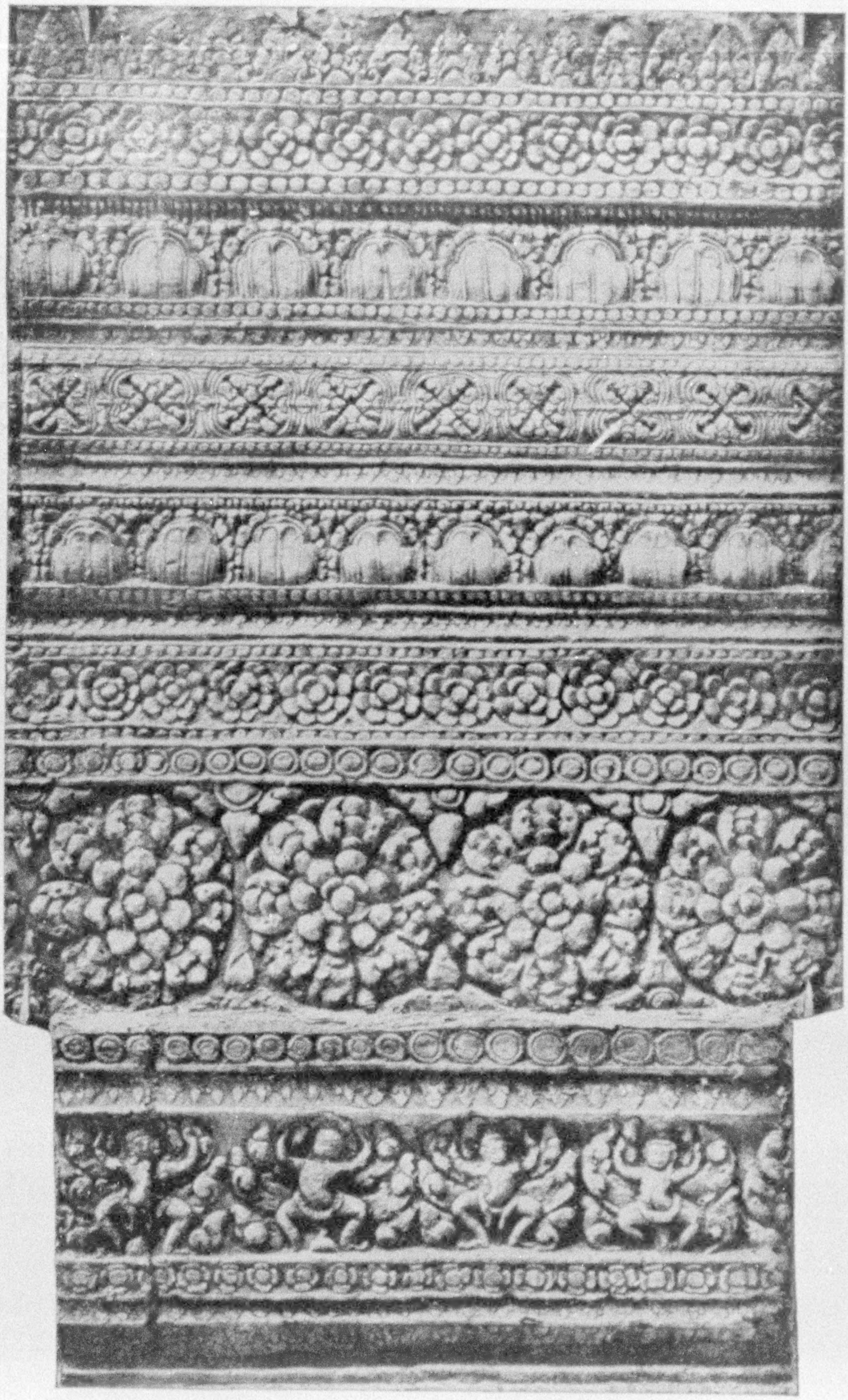
Probably the most interesting of all the decorations is the several series of bas-reliefs, which are first in the matter of quantity. Here is a partial summary of the processional bas-reliefs of this one structure:

1. Battle between men and monkeys—a favorite theme—160 feet long.
2. Battle between Hindus and unknown enemies, 160 feet long.
3. Hunting procession, 324 feet long.
4. Three more battle processionals, 171, 219, and 300 feet, respectively.

Fournereau Collection

A QUEEN WITH FIVE TIARAS: WALL DECORATION IN THE CENTRAL TOWER: ANGKOR WAT

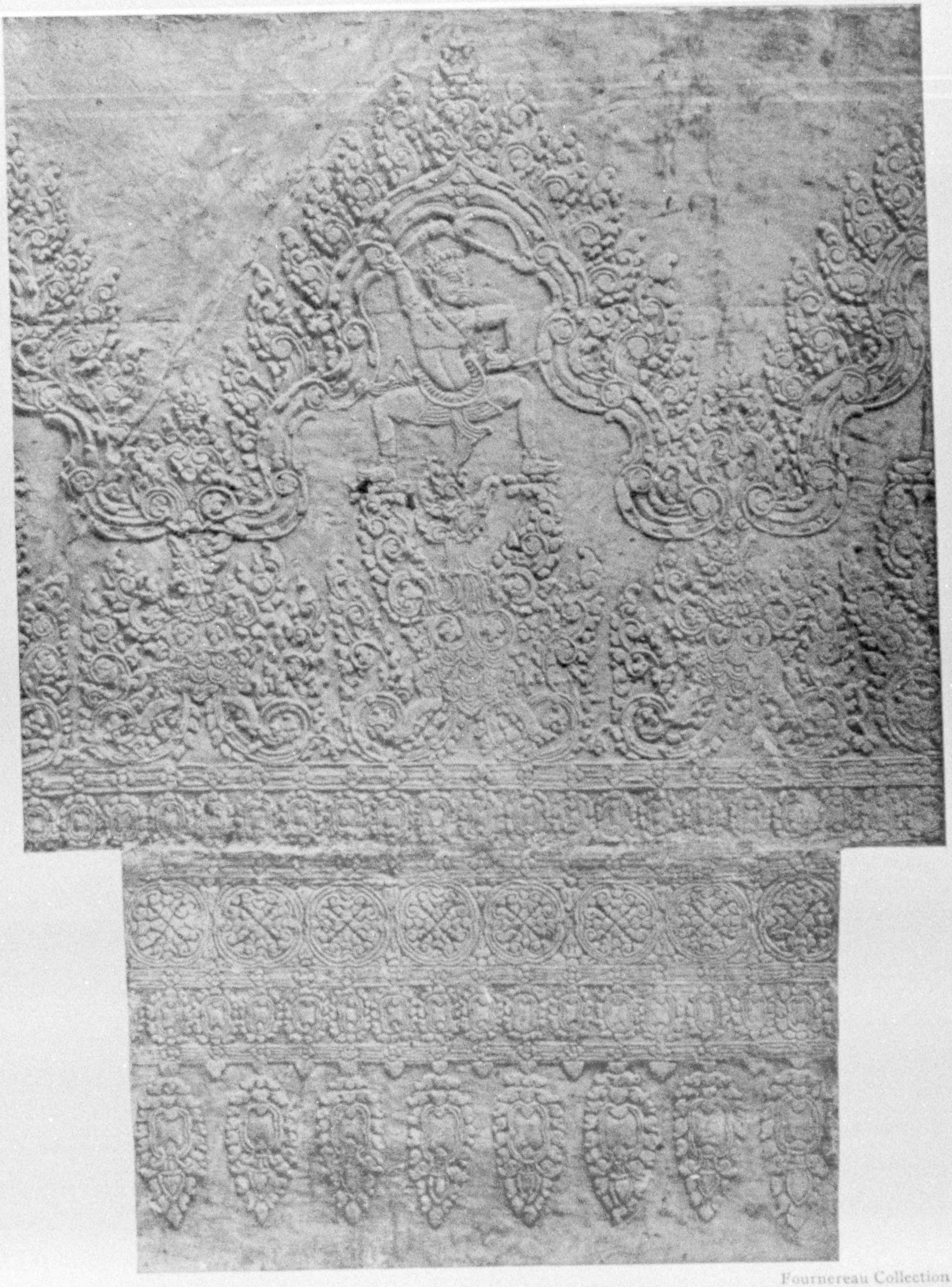
These are the principal decorative figures in the most conspicuous parts of the temple. The feet had to be put on somehow, so the sculptor turned them sideways (see page 240).



Fournereau Collection

A PORTION OF THE ENTABLATURE IN THE TEMPLE AT ANGKOR WAT, SHOWING GREAT RICHNESS OF ORNAMENTAL DETAIL

There are seven bands of designs separated by narrow ribbons scarcely less ornamental. These bands appear to be conventional yellow pond lilies, which abound in that locality, and two are lotus-leaf designs, all carved in stone.



Fournereau Collection

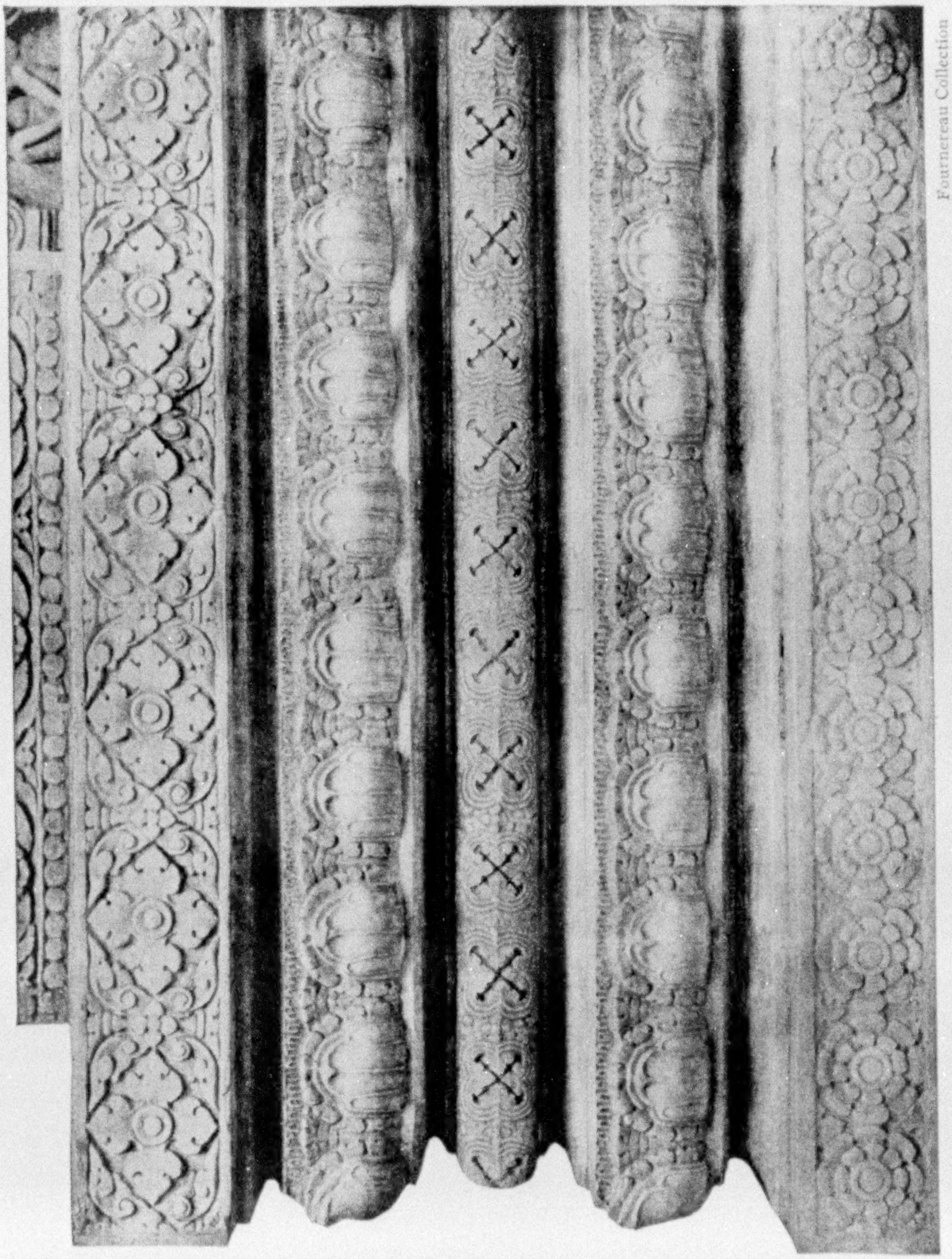
A BEAUTIFUL PIECE OF LACEWORK IN STONE

A part of the entablature, with the top of the supporting pillar, in the gallery of the central tower. The grotesqueness of the dragon heads, refined and interwoven with the finer lines, is characteristic of the whole work.

Fournereau Collection

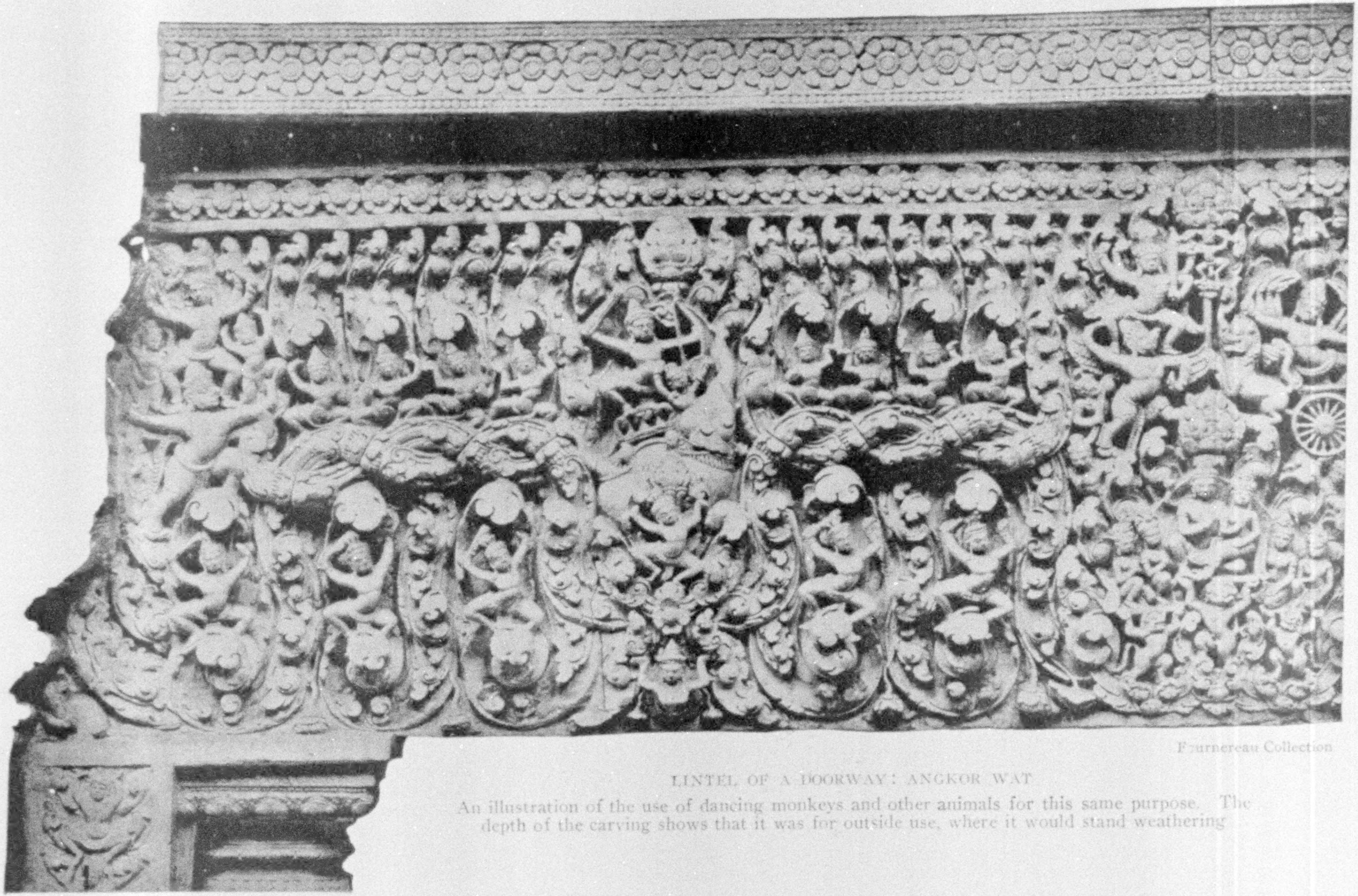
PORTION OF THE ROOF OF THE GALLERY SURROUNDING THE MAIN TEMPLE: ANGKOR WAT

Note how even the top of the roof is ornamented. The roof, to be sure, was in plain sight from the inclosed temple



Fournereau Collection

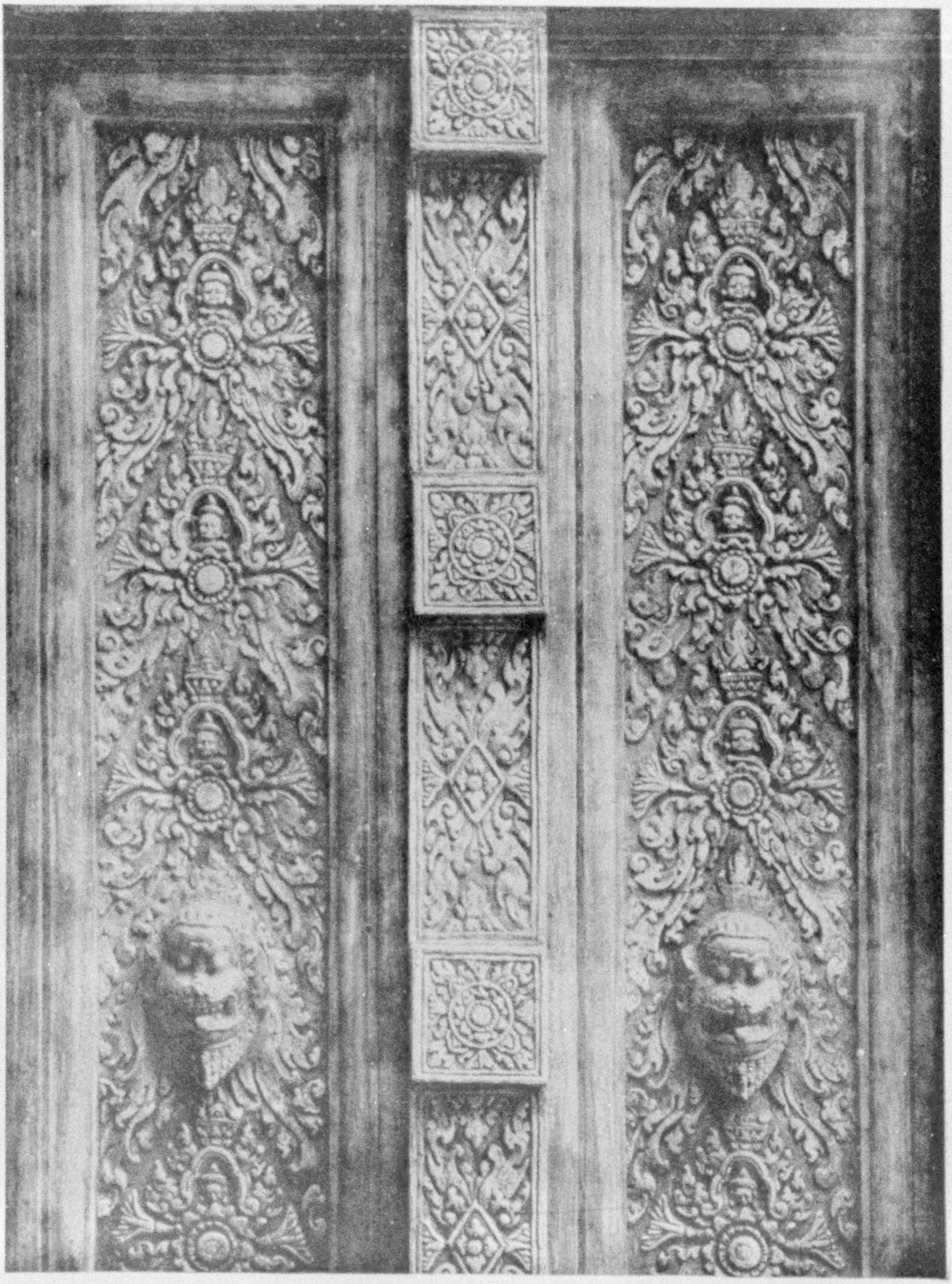
At Angkor Wat the exterior stairways and balustrades are usually treated with this great variety of decorative detail



Fournereau Collection

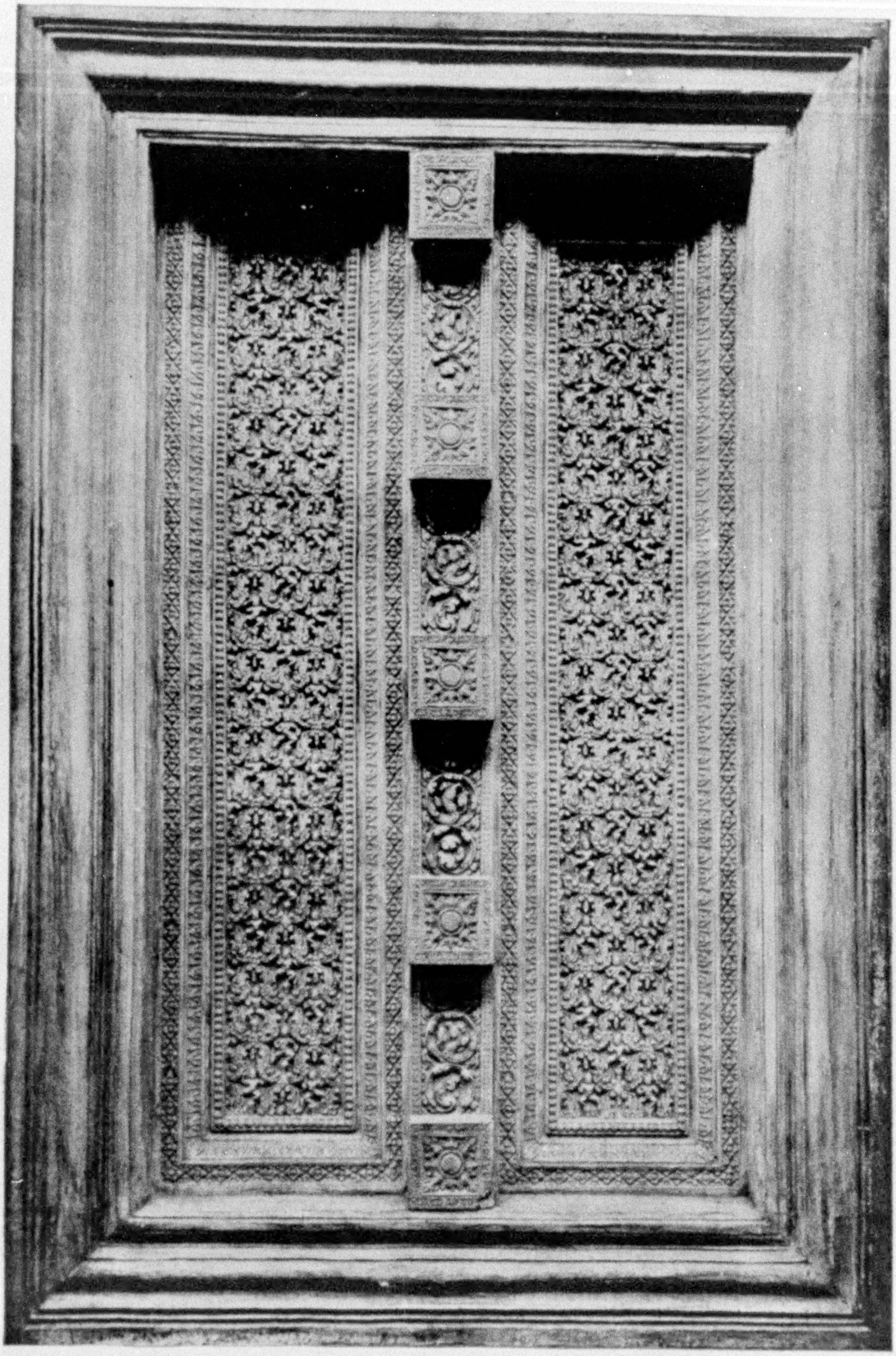
LINTEL OF A DOORWAY: ANGKOR WAT

An illustration of the use of dancing monkeys and other animals for this same purpose. The depth of the carving shows that it was for outside use, where it would stand weathering



Fournereau Collection

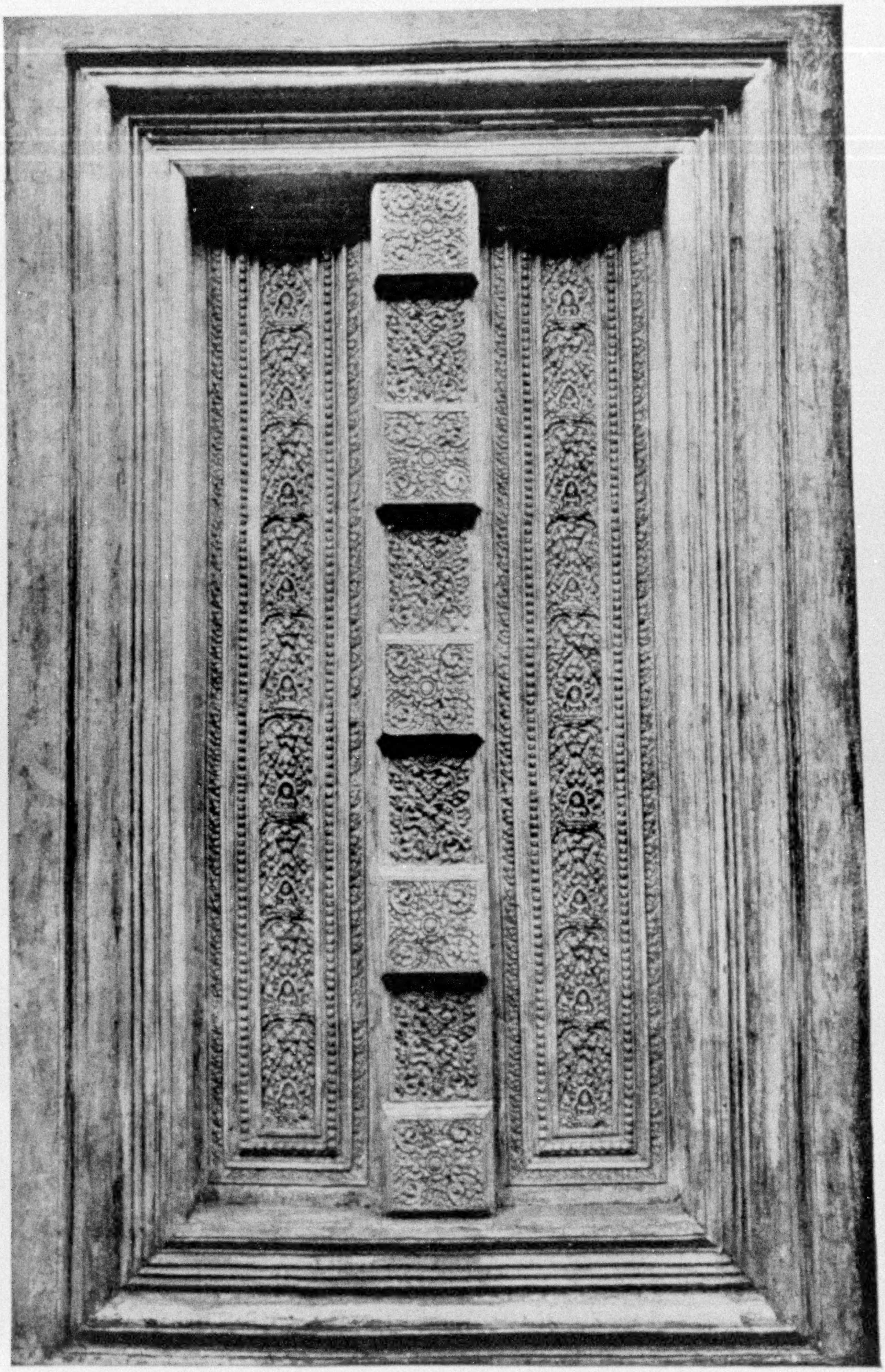
FALSE DOOR IN ONE OF THE TOWERS AT BAKONG, CARVED IN STONE



Fournereau Collection

FALSE DOOR AT LOLEY, IN ONE OF THE TOWERS

This is not lace, but carved stone. No finer example of Khmer workmanship can be found than these so-called "false-doors." Count the figures



Fournereau Collection

ONE OF THE FALSE DOORS IN THE TOWER AT ME-BAUNE, WITH REMARKABLY BEAUTIFUL TRACERY IN STONE

Evidently the false door was intended only for decorative purposes. There are many of these exquisite false doors in the various ruins of Cambodia (see map, page 225), but none at Angkor, as they probably belong to a later and more refined age than that which saw the Bayon, or even the Wat, erected.

XUM

Fournereau Collection

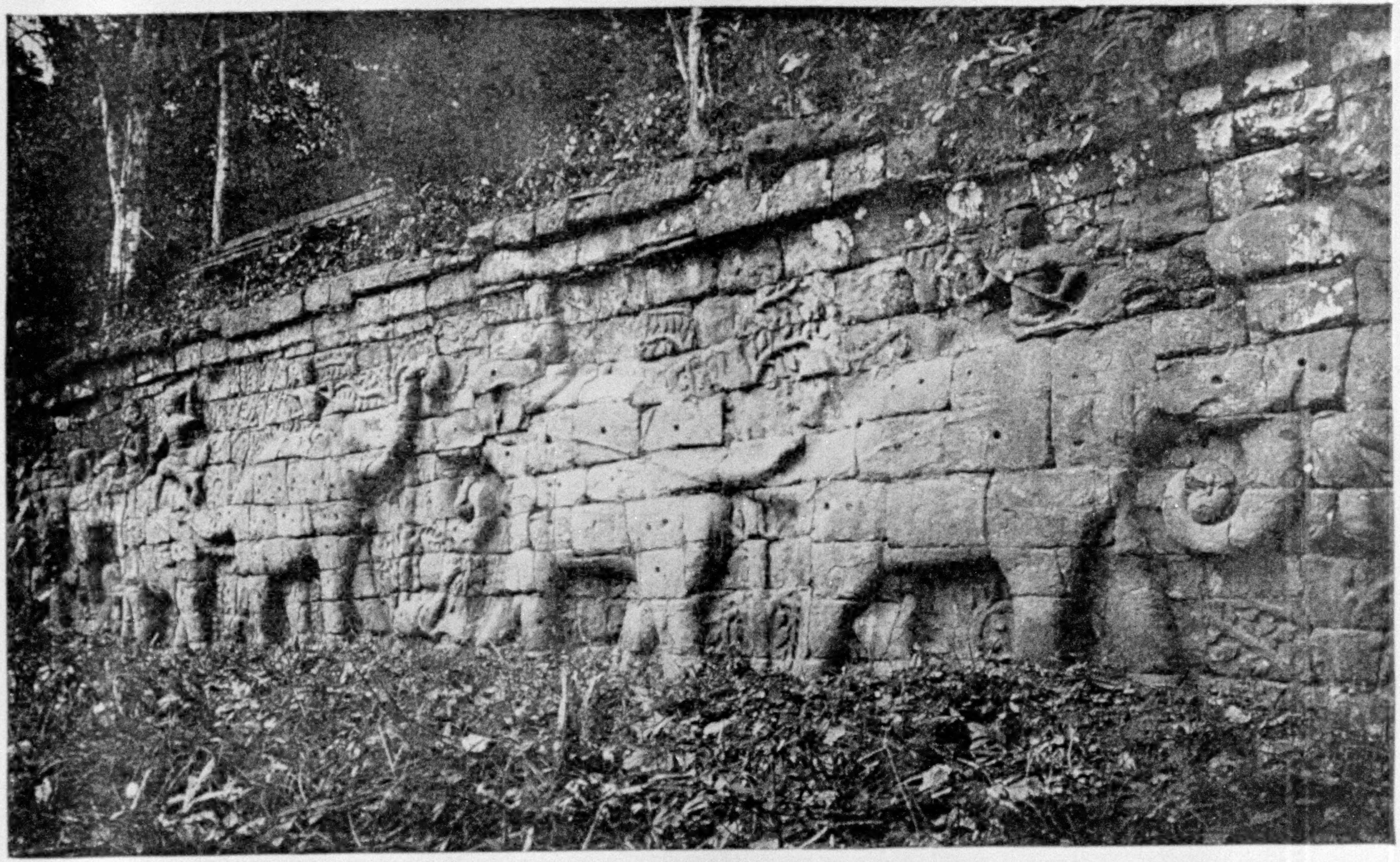
PART OF RUINS OF BAYON, THE MOST IMPORTANT RUIN AT ANGKOR THOM

Puzzle picture: how many Buddhas' faces can you find? Angkor Thom covered an area 19 times greater than Angkor Wat. It was built some 300 years before the latter and is now a complete ruin

Fourneреau Collection

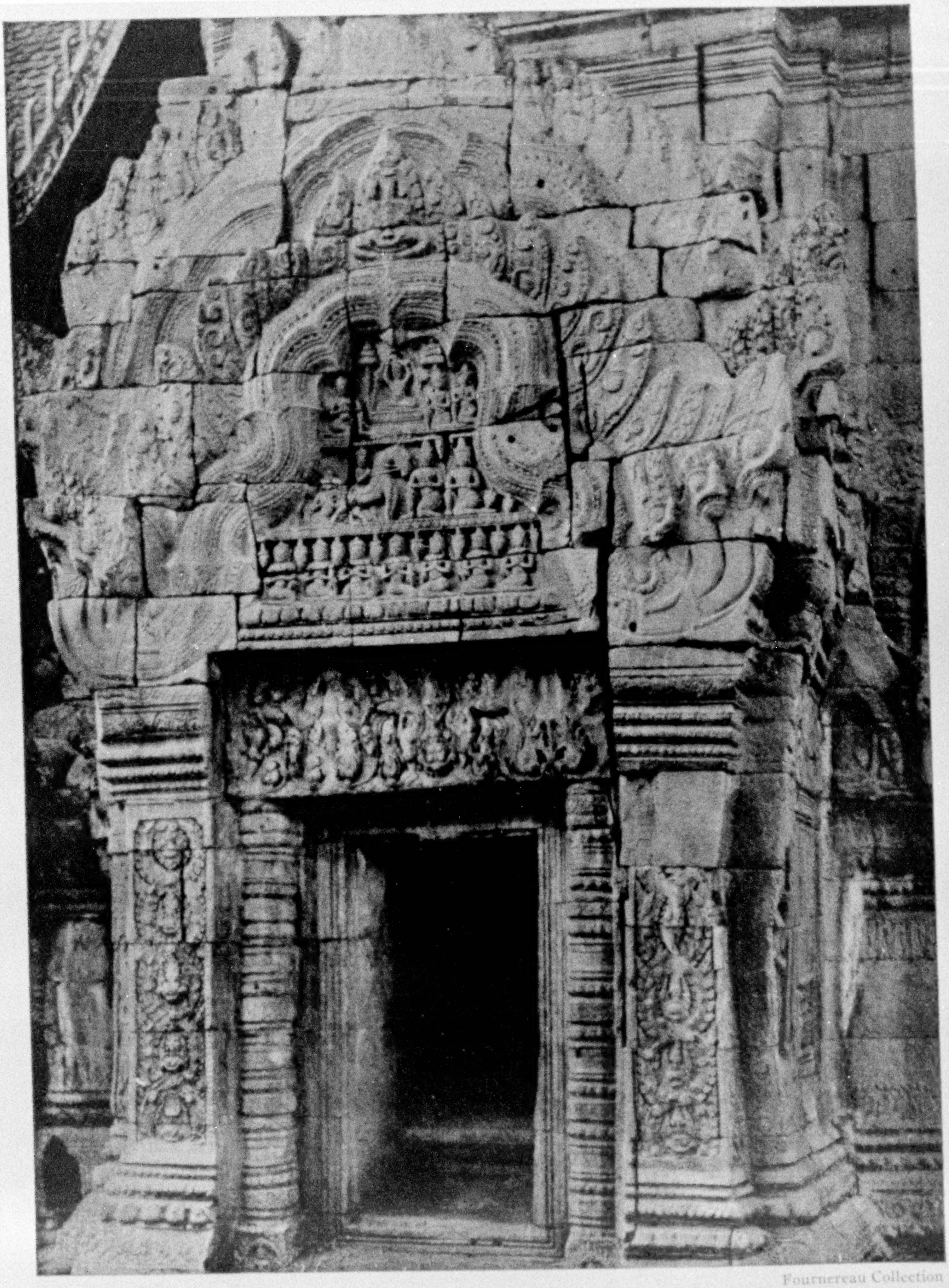
ONE OF THE FIFTY-THREE TOWERS IN THE STRUCTURE KNOWN AS THE BAYON

Showing the enormous Buddha faces looking toward the four cardinal points of the compass. Not only in the 53 towers, but in many other parts of this ruin, these same faces are found. Every one of the 53 towers had four of these faces (see page 271 and map, page 225).



PROCESSION OF ELEPHANTS ON THE WALL OF THE GRAND TERRACE: ANGKOR THOM

The holes show that they were formerly covered with trappings

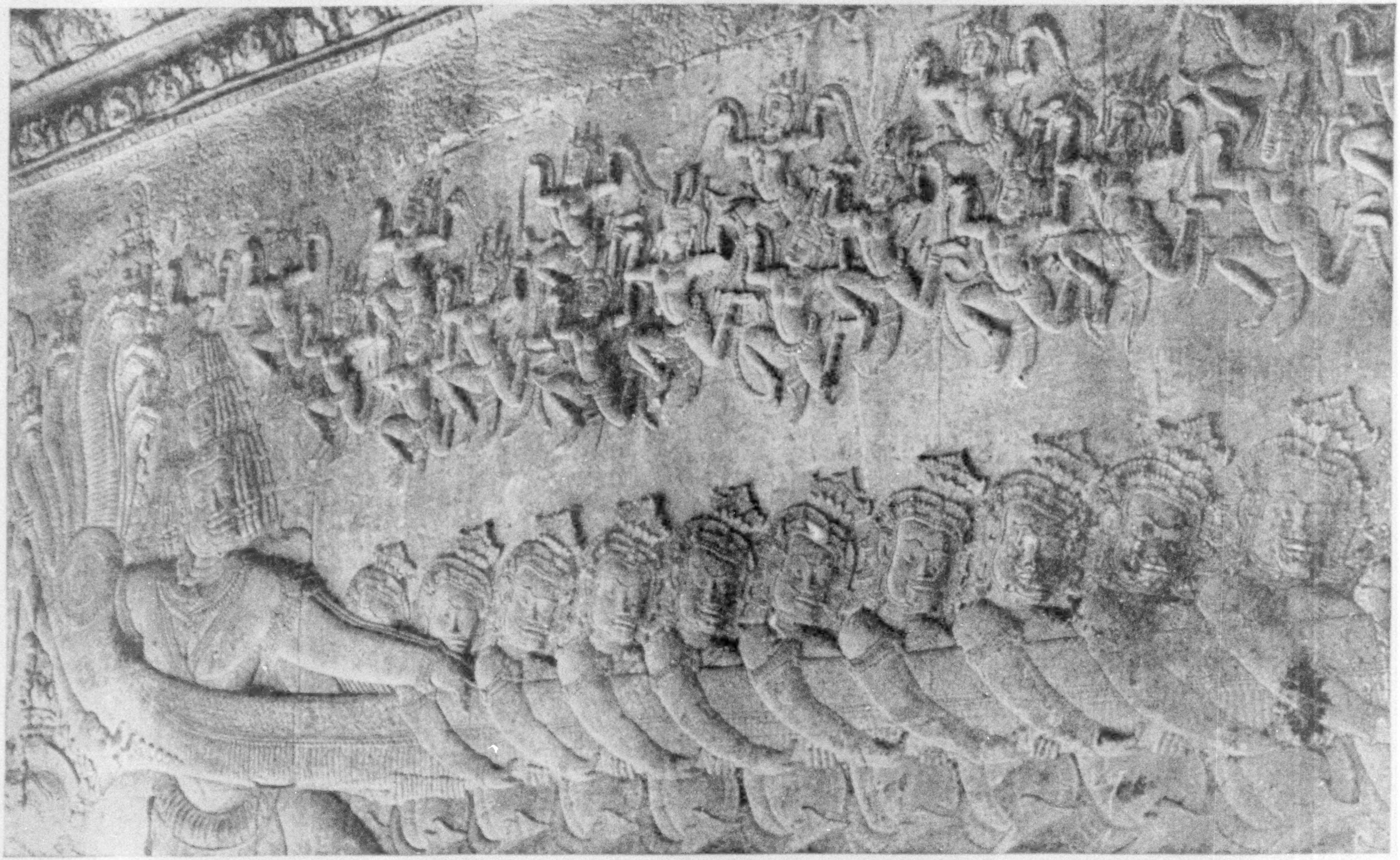


Fournereau Collection

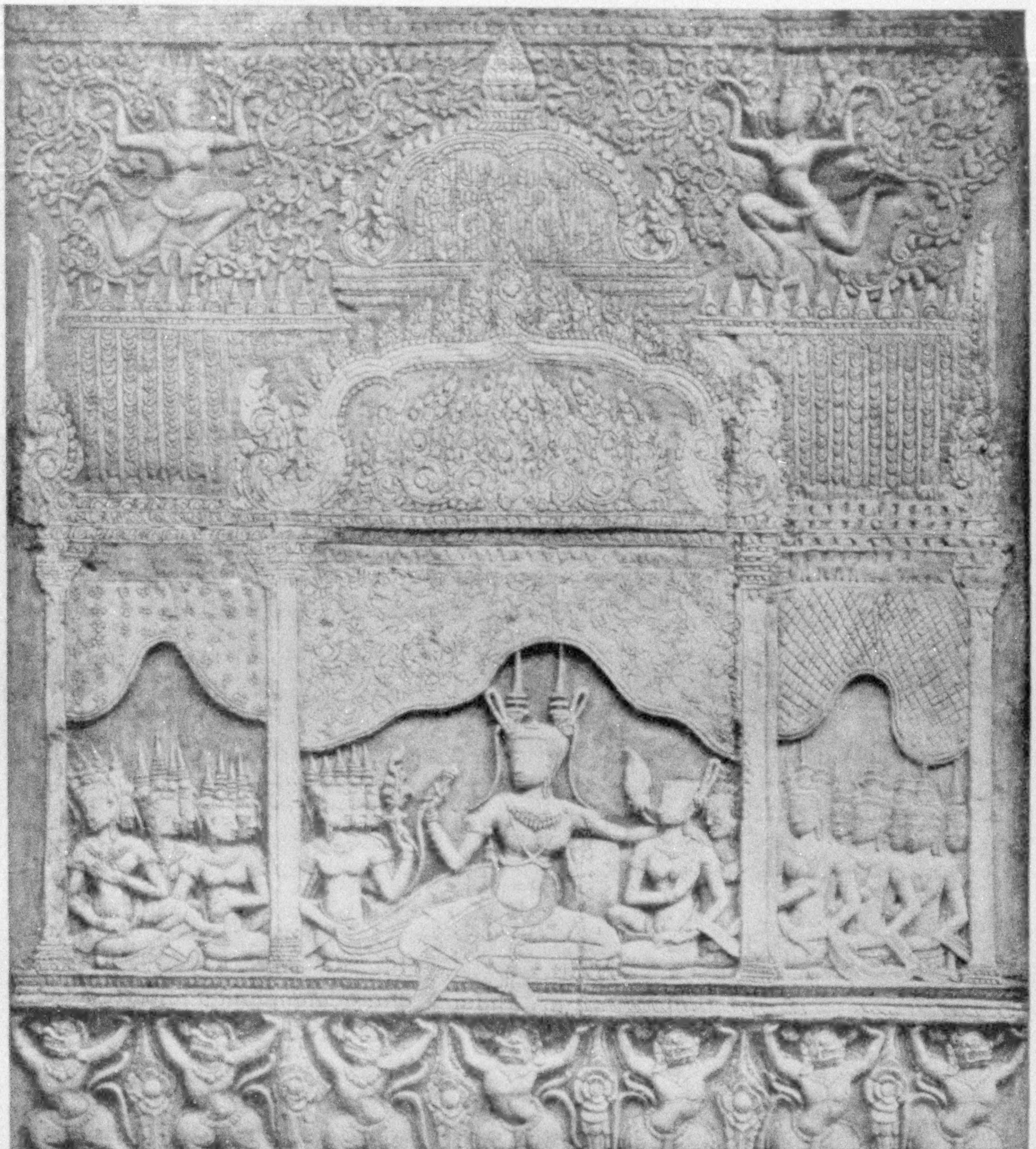
MASSIVE PORTAL; PART OF RUINS AT KOMPONG-CHNANG ON THE MEKONG

One of the many places about the plains of Cambodia where the Khmers left their mark

XUM



PROCESSION BRINGING THE NAGA, OR SEVEN-HEADED COBRA; ANGKOR WAT (SEE PAGE 267)



Fournereau Collection

PORTION OF ONE OF THE BAS-RELIEFS REPRESENTING A PRINCE IN HIS HOUSE SURROUNDED BY WOMEN: ANGKOR WAT

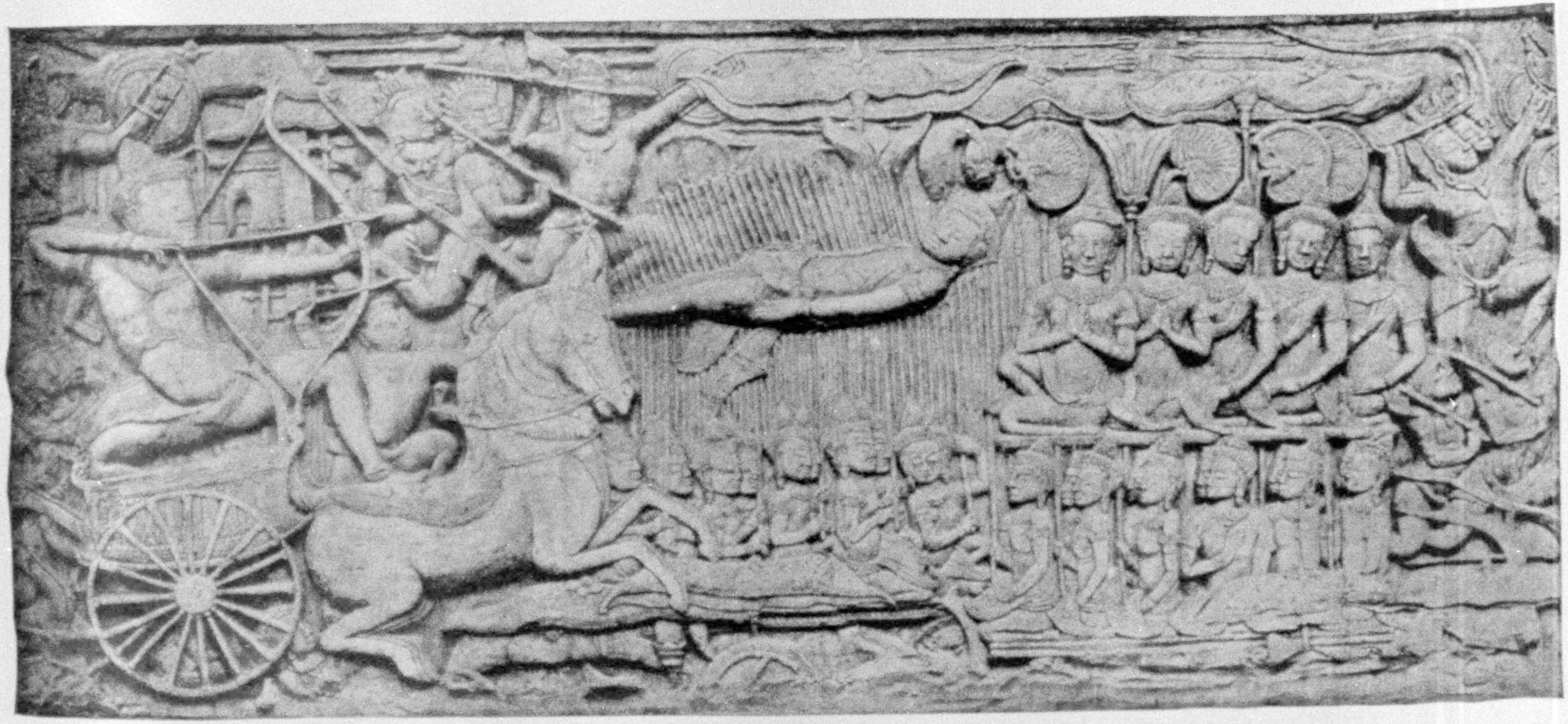
Just below this bas-relief is one showing in a long series of illustrations the different kinds of punishment inflicted. They are gruesome enough to satisfy the most cruel disposition (see page 271).

XUM

Fournereau Collection

ANOTHER OF THE BAS-RELIEFS OF ANGKOR WAT, SHOWING THE ROYAL BARK

In the bow are the musicians and dancers; under the canopy the royal family beguiles the time; in the stern the domestics are enjoying a cock-fight, just as they do now, while below the slaves are tugging at the oars through a sea crowded with fish



Fournereau Collection

PORTION OF THE BAS-RELIEFS OF THE SOUTHWEST GALLERY, SHOWING AN EPISODE IN THE COMBAT BETWEEN PANDAVAS AND KAURAVAS (MAHABHARATA): ANGKOR WAT

The recumbent figure is not supported by spears, but is falling pierced by arrows. The figures below are holding long-handled fans of lotus-leaf design

Fournereau Collection

PART OF THE HUNTING PROCESSION, 324 FEET LONG: ANGKOR WAT

Note the conventionalized tropical forest, the umbrellas shading the royal hunter, and the feet of the pedestrians. This is but one of the many scenes represented in this bas-relief, considerable variety being introduced in the main features where variety was possible. The line of footmen stretches out interminably. The part here shown is about 10 feet long and 8 feet high. This one panorama contains more than 1,000 human figures (see pages 267 and 271).

Fournereau Collection

EXPLOIT OF HANAMUNT, KING OF THE MONKEYS: ANGKOR WAT

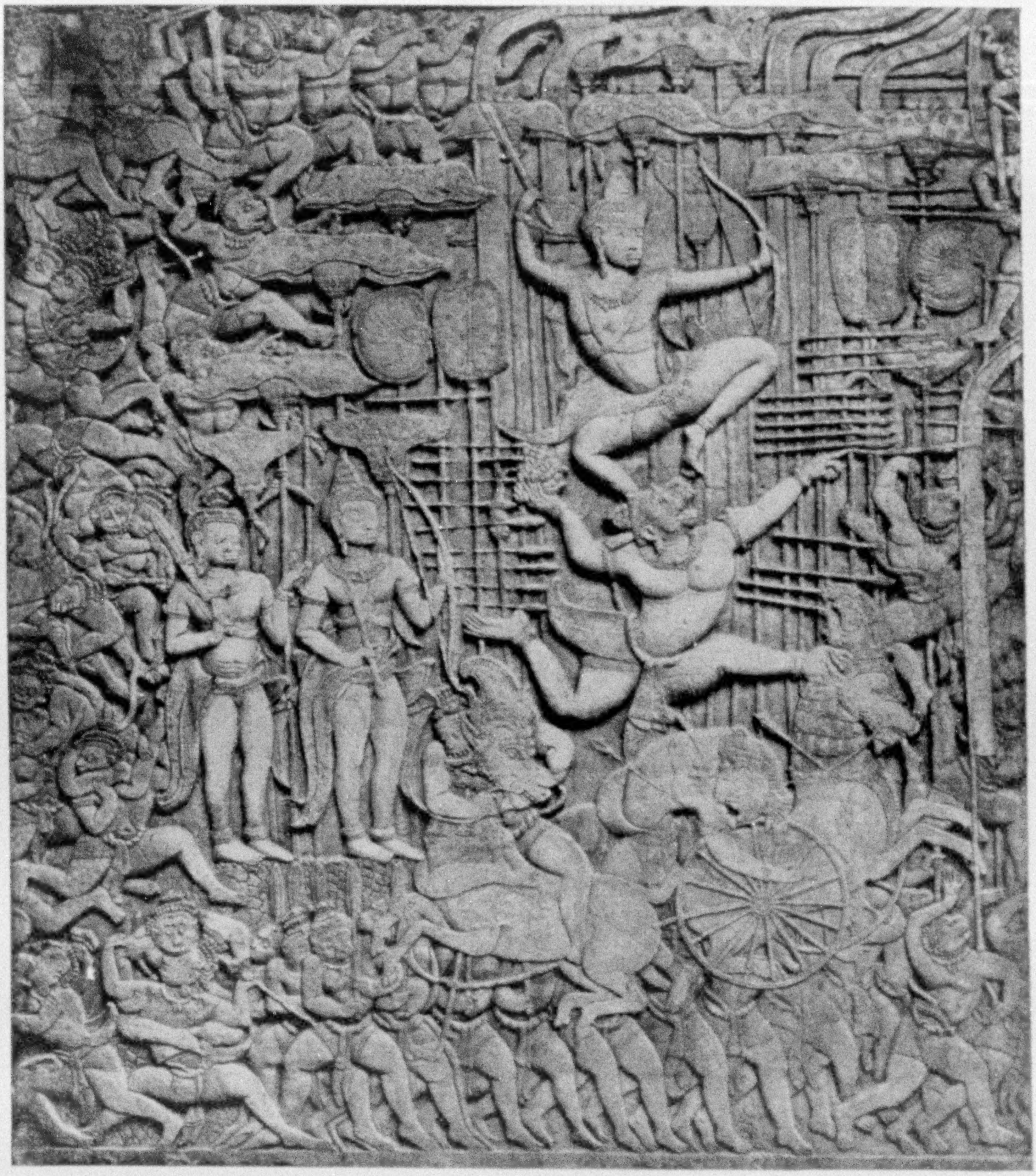
By means of his great strength he is able to seize two dragons, holding them in a position where they are powerless, and strangle them by wrapping his legs around them

5. Procession of the 7-headed snake, Naga, 126 feet long.

6. Procession of Paradise and Purgatory; length undetermined; at least 160 feet long.

It is in these processional bas-reliefs that the life of the builders, the drama of their existence, comes to the surface, if it comes at all. In the battle reliefs, particularly, there is variety of subject and detail, and the sculptor tells more to the beholder of the present than he ever intended. You see unknown armies meeting, some with Hindu head-dresses, but a great variety of others, including not a few Greek helmets.

XUM



Fournereau Collection

ANOTHER DETAIL IN THE COMBATS OF THE RAMAYANA: ANGKOR WAT

Both sides are armed with spear, shield, cuirass, and war-club. The leaders and commanders are armed with swords, bows, and arrows, and are protected from the sun even in battle by enormous umbrellas. They ride upon elephants, horses, oxen, rhinoceroses, ostriches, deer, and, as if this were not enough, fabulous monsters the work of the artistic imagination.

One would suppose this to be legend rather than history; yet there is the *coupe-coupe*, still used by the natives for beheading criminals, and there is the identical pattern of the bullock cart in which I rode over in the morning, still

Fournereau Collection

BATTLE BETWEEN MEN AND MONKEYS: ANGKOR WAT

This represents the center of the combat, where the opposing forces are joined. The antagonists are so crowded in the melee that there is no background left. This is the best of the bas-reliefs, and is 160 feet long. The part here represented is no more than 10 feet in width. The panorama contains more than 1,000 figures of men and monkeys, and, like all the bas-reliefs, is carved in stone.

XUM

Fournereau Collection

HANAMUNT, KING OF THE MONKEYS, VANQUISHED IN THE COMBAT WITH MEN, EXPIRES IN THE ARMS OF HIS QUEEN, SURROUNDED BY HIS MOURNING FRIENDS, THE NOBLES OF THE MONKEYS: ANGKOR WAT

used as an instrument of torture. That is convincing. This must be history.

The bas-reliefs on the front of the building are by far the best. They are detailed and developed quite conscientiously as they understood things, and are marked by considerable animation. In two respects they are notably deficient, namely, in the treatment of the eyes and the feet. Whole rows and hundreds of rows of men with eyes just alike—not a particle of expression. And then the feet—was there ever a race of sculptors that didn't have trouble with the feet? In this case everything seems to have been tried by turns, by different workmen, no doubt, and you will see a yard or two of procession where the bottoms of the feet are turned outward toward the spectator, though the artist meant you should regard them as the tops instead; then again a front view of the men and side view of their feet. Yes, the feet are as ancient as primitive Greek or Egyptian.

The processional relief of Paradise and Purgatory is, in fact, a triple processional extending along the wall in parallel order. In the lower, human ingenuity is taxed to invent punishments terrible enough to satisfy; and it is interesting to note that a great many of these were rubbed smooth and shining by the hands of the present day. The paradise relief is really double, with the moderately happy people in the lower and the superlatively blessed sitting up above in little alcoves, which look for all the world like proscenium boxes at a theater.

One very interesting feature of the hunting processional is that the kings and other great ones are each honored with an inscription, doubtless his name and rank. So absolutely new and unknown is all this that not a word has been deciphered. Many of the columns of the inner temple are covered with inscriptions, all awaiting the translator.

Angkor Tom is three and one-half by four kilometers, or five and four-tenths square miles, in extent; that is to say, over 19 times the size of Angkor Wat. It is likewise surrounded by a wall, which is pierced by imposing gateways. Its principal ruins are the Bayon, the Bapuon, and the Pimean Acas, with numerous indistinguishable ruins within its inclosures.

The bayon alone—with its 53 towers, each with four Buddha faces looking toward the four cardinal points of the compass—was probably as large as the wat. Conjecture says that this was the royal treasury, and already cupidity has been busy in a vain search for the supposed treasures. Lofty trees reach high in the air above these ruins, and the monkeys and squirrels gambol in their tops undisturbed. Pimean Acas is a quadrilateral pyramid of colossal proportions, but of forbidding appearance in its present state; though, like all the others, it yields beautiful works in stone.

Who built these ruins, and when did they build them?

We have already said that the Khmers built them; but who they were, where they came from, when and why they built, and, finally, why they disappeared, nobody is yet able to answer with certainty. Tradition in the person of an alleged Chinese historian says that a powerful ruler once emigrated from India with all his followers to escape a still more powerful ruler; that he subjugated the people he found here and put them to work erecting these enormous edifices of stone.

But there are inscriptions to be mastered, which will be done some day, and then we shall know more about the subject. The letters closely resemble those of the Siamese and the modern Cambodian, and the work of deciphering may not be difficult.

Incidentally it may be remarked that the features of the men in the bas-reliefs resemble in some respects those of the Cambodians of the present day, and it is not improbable that the key to the past lies hidden in their monasteries. At present the safest guess as to the date of building is as follows:

For Angkor Tom, the 9th century A. D., or during the reign of Alfred the Great in England. For Angkor Wat, the 12th century, or 100 years after the Norman Conquest.

There are those who venture to particularize far enough to say that in the

fourth century B. C., a young prince of Delhi made war upon his father for the partition of his kingdom, was defeated and banished with thousands of his followers. They journeyed eastward, crossed the Ganges, the Irriwaddy and the Meinam, but did not cross the Mekong; for here they found primitive tribes whom they easily subdued. Here they established the kingdom of Cambodia, reduced the Siamese, the Annamites and all the tribes of the peninsula of Indo-China to subjection, and became very rich and powerful. In the course of the centuries, they built several capitals in different parts of their dominions, of which Angkor Thom is the largest. The Chinese historian, above referred to, visited them in the thirteenth century, just before, as alleged, they were overthrown by the Siamese and Annamites. The account he gives of their wealth and splendor is well nigh unbelievable; yet their sources of wealth were extraordinary, including as they did the tribute of the subdued tribes, the great fertility of the soil, and the ruby mines of Battamberg, which are still in operation. Could this have been the fabled wealth of India which tempted Columbus to venture westward, and quite incidentally discover a new world?

THE NATIONAL GEOGRAPHIC SOCIETY

THE seventh annual banquet of the National Geographic Society, on January 26, was the largest and most enthusiastic dinner in the history of the Society. Members were present from all parts of the United States. The special event of the evening was the announcement of the election of Mr. James Bryce, the British Ambassador, as an honorary member of the National Geographic Society, in recognition of his personal contributions to and interest in geographic science. A unique feature of the menu were dates grown in California, an account of which is given on page 291.

The program of speeches follows:

DR. HENRY GANNETT, PRESIDENT OF THE NATIONAL GEOGRAPHIC SOCIETY

Ladies and gentlemen of the National Geographic Society: One year ago, when I reported on the progress of the Society, I stated that it contained 74,000 members. Tonight the Society contains 107,000 members. This great membership enables it to be a very powerful factor, especially in the matter of diffusion of geographic knowledge, for which purpose the Society publishes the NATIONAL GEOGRAPHIC MAGAZINE. A year ago it was said that the magazine was just as good as it could be, but our members think it has improved during the year. Today the Society publishes other works for the increase and diffusion of geographic knowledge. During the past year the Society has kept close watch of the volcano at Bogoslof, a little volcano which once or twice or three times a year goes on a rampage.

We are fortunate tonight in the fact that Dr. Graham Bell has consented to act as toastmaster. As you know, he was President of this Society for many years, and it is largely due to his efforts that the present prosperity of this Society has come. I take great pleasure in introducing to you Dr. Alexander Graham Bell.

THE NATIONAL GEOGRAPHIC SOCIETY, BY DR. ALEXANDER GRAHAM BELL

Mr. President, ladies and gentlemen of the National Geographic Society: In thanking you for the honor conferred upon me by selecting me to preside over this meeting as toastmaster, allow me to congratulate President Gannett and the National Geographic Society upon the continued growth and prosperity of the Society. Do you realize that this growth and prosperity is unprecedented in the history of the world? There has never

been in the history of the world a scientific society that has increased in influence and power as the National Geographic Society.

As I have been associated with the Society since its very inception, you may perhaps pardon me for speaking for a few minutes of the Society itself, and of the causes that have led to this great growth. In the year 1888 the Society was organized under a national charter "to promote the increase and diffusion of geographic knowledge." Just think what that means: *To promote the study of the world upon which we live.* A truly great object for a little, feeble organization to undertake. At that time we had only about 200 members.

The Society had no endowment, nothing coming to it but the membership fees. No millionaire has since come forward to help us out, and yet today the Society has a great endowment raised by its own efforts. We have now an annual surplus, over and above all the running expenses of the Society, amounting last year to $43,000—a surplus to be devoted to the promotion of geographic science. Why, that is equivalent to more than four per cent upon an investment of $1,000,000. We never had to take off our hats to any multi-millionaire for having endowed the Society with a million dollars; we have done it ourselves.

THE EARLY DAYS OF THE SOCIETY

When I come to look back upon our early days, what a different condition of things prevailed. We had only about one thousand members and the Society was living from hand to mouth. Like many other scientific societies, we constituted a strictly technical organization.

We supported the National Geographic Magazine, at that time a valuable technical journal that every one put upon his library shelf and very few people read. It was valuable, it was important, but did not contribute anything to the financial support of the Society.

In spite of the fact that the members of the Board of Managers and all the officers of the Society, including the editor of the magazine, served without pay; and in spite of the fact that our lecturers, as a rule, cost us nothing excepting an occasional honorarium to cover traveling expenses, our income, being derived exclusively from membership fees, was hardly sufficient to pay the printer's bill for the magazine, the rent of our lecture hall, and the ordinary running expenses of the Society. Deficits were by no means unknown.

We had no permanent home. Half an office room constituted our headquarters, and in shifting from one building to another, as happened more than once, a feeling of unpermanency ensued and valuable material was in danger of loss.

Then the use of the Hubbard Memorial Building was offered to us in memory of our first president—Gardiner Greene Hubbard—and for the first time we possessed a permanent habitation that in its beauty spoke of the position to which we aspired. But it threatened to be a white elephant, for we did not even have the means to provide for its lighting or to take proper care of it.

It became a matter of vital necessity for the Society to increase its membership. Necessity spurred the Board of Managers into activity; and they adopted a new policy—unique, so far as I know, in the history of science. I do not know of any other scientific society that has ever adopted it, and I do not know of any other society that has succeeded as the National Geographic Society has done. Now, how was this accomplished?

First of all, instead of limiting our membership to strict geographers, we threw open the doors of membership to all who desired to promote the increase and diffusion of geographic knowledge. We had a membership of one thousand in the District of Columbia; we had ninety millions of people outside of the District of Columbia to whom we could appeal for an increase in our membership, but all we had to reach these outside members was our magazine. Our Washington members enjoyed the course of lectures, but the outside members would have nothing but a magazine to hold them to the Society, and the question was, how could we hope to interest

thousands and thousands of people in a strictly technical geographic magazine.

It was obviously necessary to change the character of the magazine and to adapt it to interest a larger circle of non-technical members. We adopted this policy with an aim to making the magazine support the Society. We did not mean to lower the scientific standard of the magazine and make it simply popular, but we wanted to add certain features that would be of interest to everybody.

But in starting out to make a magazine that would support the Society, instead of the Society being burdened with the magazine, a man was of the first necessity; if we did not get the right man the whole plan would be a failure, and I can well remember how our Board of Managers discussed this proposed plan, and the difficulty of getting a man, and how the idea was laughed at that we should ever reach a membership of 10,000. Why, it was ridiculous. Geography, the dryest subject of all in our schools, how could you expect a membership of 10,000 in the United States alone!

As I said, in the beginning, we found it necessary to get the proper man, but fortunately we found him. A young man who had made a very brilliant record at Amherst College was engaged as assistant editor of the magazine to stir up these new ideas, and to put new life into the scientific journal. But the Society did not have the money to pay his salary; that had to be raised by voluntary contributions from interested members. And so Mr. Gilbert H. Grosvenor commenced his work in 1899. He speedily captured the Society—and incidentally he captured one of my daughters.

Mr. Grosvenor later became Editor and then Director of the work of the Society. We have been very fortunate in securing his services, and with the intelligent action of an unusually fine Board of Managers, and the cordial support of the members of the Society, the success of the Society has been secured. We have increased to 107,000 members and we are still on the upgrade. There is no reason to suppose that we are going to stop growing.

THE PRESENT CONDITION OF THE SOCIETY

Our magazine has become the greatest educational journal of the world. It goes to thousands of schools. Its circulation is greater than that of the *Century Magazine*, *Harper's Magazine*, or *Scribner's;* it is as large as that of *World's Work*, *Review of Reviews*, or *The Outlook*, and our outlook is as good. There is no reason why the circulation of our magazine should not increase, and there is no reason why the National Geographic Society should not be placed in the possession of an endowment fund for geographic research, of its own making, many times that which it now possesses.

Progress in securing ways and means has been accompanied by difficulties in other directions. So far as scientific discussion is concerned, the Society has been swamped by its own success. In the old days we had a small scientific society that would meet at the Cosmos Club for the purpose of carrying on technical discussions. Now we cannot do that. We cannot even meet in our own beautiful home on Sixteenth Street for this purpose, for we have grown too large. Who can discuss questions in the presence of one or two thousand people? Even our most technical lectures were attended by too many persons to be accommodated in our own hall at the Hubbard Memorial Building. Even the largest lecture hall in Washington has been found insufficient to receive the large audiences that crowd to our lectures.

We tried the experiment this year of having each lecture repeated, once in the afternoon and again in the evening, and to our surprise the hall is crowded upon both occasions. The question of how to revive scientific discussions has been a perplexing matter for the Board of Managers.

It has been proposed on various occasions to elect Fellows to the Society, and then have meetings of those Fellows for technical discussions. There has been considerable feeling, however, against a class distinction of this kind, which is all very well in a monarchical country, where aristocratic distinctions

are recognized, but is somewhat out of place in a republic like the United States.

Another plan is now working itself out which I think will afford the final solution of the problem. All large bodies act through committees, and we have in the Society a Committee on Research, which guides us in our appropriations of money for that purpose. There is no reason why that committee should not be enlarged, and it is now proposed to meet the question of scientific discussion in the Society by the enlargement of the Research Committee into a small society within the Society, which can meet in the Hubbard Memorial Hall to discuss scientific matters.

In relation to our contributions to science we are now able to do what has not been possible for us before—contribute substantially to the support of geographic research, under the direction of our Research Committee.

We have not done very much in this respect in the past. We thought, while we had the opportunity, we had better look out for the Society itself first, and form a sinking fund in case of an emergency. We have over $100,000 in that fund now and are beginning to devote a larger and larger amount each year for research.

We commenced by sending small expeditions to study the volcanoes of Mont Pelée and La Soufrière. We also sent representatives to the Arctic regions, and did what we could, in a small way, to help Peary's last expedition which discovered the North Pole.

There is one subject that is of profound interest to us all, the glacial period in America, the time about when man made his first appearance on the earth. How can we study that glacial period? Surely it would be best to begin by studying the living glaciers of the world. A great deal is being done in this direction in Europe, and especially in Norway; but we have in Alaska a glacier system unrivalled by the rest of the world, the study of which may throw great light upon the explanation of the glacial period itself.

The National Geographic Society has supported for three years past a special expedition in Alaska, to study the glaciers of that country, under the leadership of Prof. Ralph S. Tarr, of Cornell University, and Prof. Lawrence Martin, of the University of Wisconsin. A popular account of these explorations has been printed in the NATIONAL GEOGRAPHIC MAGAZINE; and the great volume, giving the scientific results of this work, upon which we have already expended over $18,000, is expected to be published this year, in October. It will be one of the first contributions to geographic knowledge published by the Society.

We have been amply able to encourage the researches of individual members by publishing the results in the NATIONAL GEOGRAPHIC MAGAZINE, but this will be the first great work showing the activity of the Society itself in the field of geographic research.

ELECTION OF MR. BRYCE TO HONORARY MEMBERSHIP

We are honored tonight by the presence of one the world always delights to honor, His Excellency the British Ambassador.

The members of the Geographic Society are especially interested in James Bryce and his career, from the fact that his inherent bent since boyhood has been geography. When he was only twenty years of age he made a special examination of the flora of the Island of Arran and at twenty-one published an account of his studies. We probably all of us know something of his well-known work on "Trans-Caucasia and Ararat." I believe he was the first, or one of the first, since Biblical times, to reach the summit of Mount Ararat. I do not know whether he has been in the habit of climbing mountains ever since, but I notice that in 1899 he was president of the Alpine Club.

However, that has not been the subject that has especially interested us in his career. It is his profound study of peoples and countries and customs. We have learned more about our own institutions from Mr. Bryce's book on "The American Commonwealth" than we ever knew before. I do not think the British

government ever did a more tactful or a more graceful thing for the American people than to send to this country as their representative the author of "The American Commonwealth." They sent us a man who understood us and a man who understood our institutions. But Mr. Bryce's knowledge is not limited to the United States. His great work on "Impressions in South Africa" shows him to be just as much a master of Africa as he is of America. Indeed I doubt not but that he owes his preeminence as a statesman to the profound knowledge of countries and peoples that he possesses that can be utilized by the British government.

Your Excellency, the National Geographic Society recognizes very fully your eminence in geographical research of the very highest type, researches relating to the countries and peoples and institutions of the world, and I have been requested by the Board of Managers to announce tonight that they have elected you an honorary member of this Society.

We cannot hope, Your Excellency, to add honor, or to confer honor, upon one so eminent as yourself, but the Society will confer honor upon itself by adding your name to the list of eminent men who constitute the honorary membership of the Society.

ADDRESS BY THE BRITISH AMBASSADOR, MR. JAMES BRYCE

President Gannett, Dr. Graham Bell, ladies and gentlemen of the National Geographic Society: I thank you most heartily for the very high honor you have done me in electing me an honorary member of your Society. There is no honor that could come to me which I shall prize and cherish more, because I know of the long career of this Society, of the admirable work it has done and is doing for geographic exploration and research and of the new fields into which, as Mr. Bell has told you, it is always pushing its way.

You said, Mr. Bell, and I heard what you said with very great pleasure because it seems to me that your friendship has enabled you to understand what I feel, that there is nothing I am so fond of and nothing I have been all my life so interested in as geography. In fact, it sometimes occurs to me I have mistaken my vocation in life. It might have been better to have chosen the vocation of a traveler and describer of countries, rather than that of a lawyer, or writer, or politician, because there is, in my opinion, no pleasure comparable to that of studying the earth on which we live and endeavoring to obtain a knowledge of what the Creator has given to the different peoples on this earth, of that which it contains, and how the course of human events, from the time of the prehistoric ages down to the fuller light of our own time, has been determined by the physical circumstances under which the various races of mankind have been led in their several careers.

Whichever way you look at it, whether as the gradual unfolding of the forces of the human intellect, or as evidence of the wise and beneficent purposes of our Creator, there is no subject of more interest and better fitted to suggest profound contemplations than the history of mankind in relation to the history of the earth on which we live, and it is a history the full meaning of which is never completely unfolded, because every succeeding age adds something to it.

I feel, therefore, ladies and gentlemen, that there is nothing that the man who loves this earth and who loves his fellowmen ought to desire more than to devote himself to this inquiry, and certainly there is no better way than being admitted as a member to your Society, which is laboring in that glorious task.

It is very hard, ladies and gentlemen, to find anything to say that has not been better said by many of your members, who could claim a much fuller knowledge than I can upon the purpose and methods of geographic research; but when I was thinking of previous meetings at which I have had the pleasure of attending, it occurred to me on one occasion there came up for discussion the possible exhaustion of the field of geographic exploration. It has at these meetings been pointed out how much of the earth there was which was unexplored and unknown in the days when

you and I, Mr. Bell, were boys; when the map of Central Africa was one large empty space, with a little line of eminences, called the Mountains of the Moon, drawn across it; when the interior of Asia was almost unknown; when the Arctic regions had been so imperfectly explored that it was not known that Greenland was an island, or that there existed a Northwest passage, and even when among the regions better known there were practically many tracts unsurveyed.

More work has been done within the last sixty years than I suppose was done in the one hundred and fifty years preceding, and it is true there does not now remain very much of the earth's surface with which we have not some acquaintance. Africa has been entirely opened up, especially by the journeys of Prejevalsky, Younghusband, and Sven Hedin, and years of study have given us a pretty complete knowledge of Central Asia.

OPPORTUNITIES FOR GEOGRAPHICAL SOCIETIES

While traveling in South America a year and a half ago it occurred to me that there is another branch of descriptive geographical science the importance of which is only beginning to dawn upon us, and which may occupy us for a long time to come, even after we have come to know the surface of the earth in the sense in which the surveyor knows it. What I refer to is the discovery of the possibilities of each part of the earth for supporting the life of man and for subserving human industries.

It is extraordinary how much has been accomplished of late years in that direction. Take your own country: There were large tracts of your western regions which were supposed to be unprofitable. You have succeeded in utilizing those waste tracts in three ways, one of them an old way, but two of them new. The old way was that of irrigation, which you have conducted in your West upon a grand scale, both in results and in example. The results have very much benefited a large population by enabling them to use what were once useless deserts. The example is stimulating Australia and South Africa.

The process of dry farming has made available tracts which were previously considered useless, and now we all trust that by the application of those methods a happy and prosperous population may grow up in parts of your territories and in ours where formerly the want of rain forbade tillage. Speaking as a Briton, I desire to tender to you and those of your scientific men who have worked in that field our thanks for your discoveries, which promise to be of the utmost service to arid tracts of the British Empire dominions in India, as well as large parts of Australia and South Africa.

The third method, not so fully developed, but which I believe has a great promise for the future, is that of discovering the plants which are fit for growing in dry regions and for supporting live stock there. I believe the botanical surveys going on under the auspices of your Agricultural Department open up a prospect of making available for the support of live stock large tracts now unprofitable, simply by finding plants that can live in dry regions and furnishing food for animals in deserts previously barren. That is an illustration of what is being done in this country. The same thing is true of Canada, where we have discovered that grass can be grown and large cereal crops raised on regions that were hitherto considered incapable of producing any growth.

What I wanted to mention to you particularly was a very interesting and scientific study which presents practically the opposite problem, the problem of a country where there is not too cold a climate, but too hot a climate; where there is not too dry a sky, but too wet a sky, and where the question is whether man will be able to resist the tremendous forces of nature, and so to turn to account the appliances of modern science that by their help we may render useful to man a vast region, which a torrid sun and torrential rainfall have hitherto rendered unavailable.

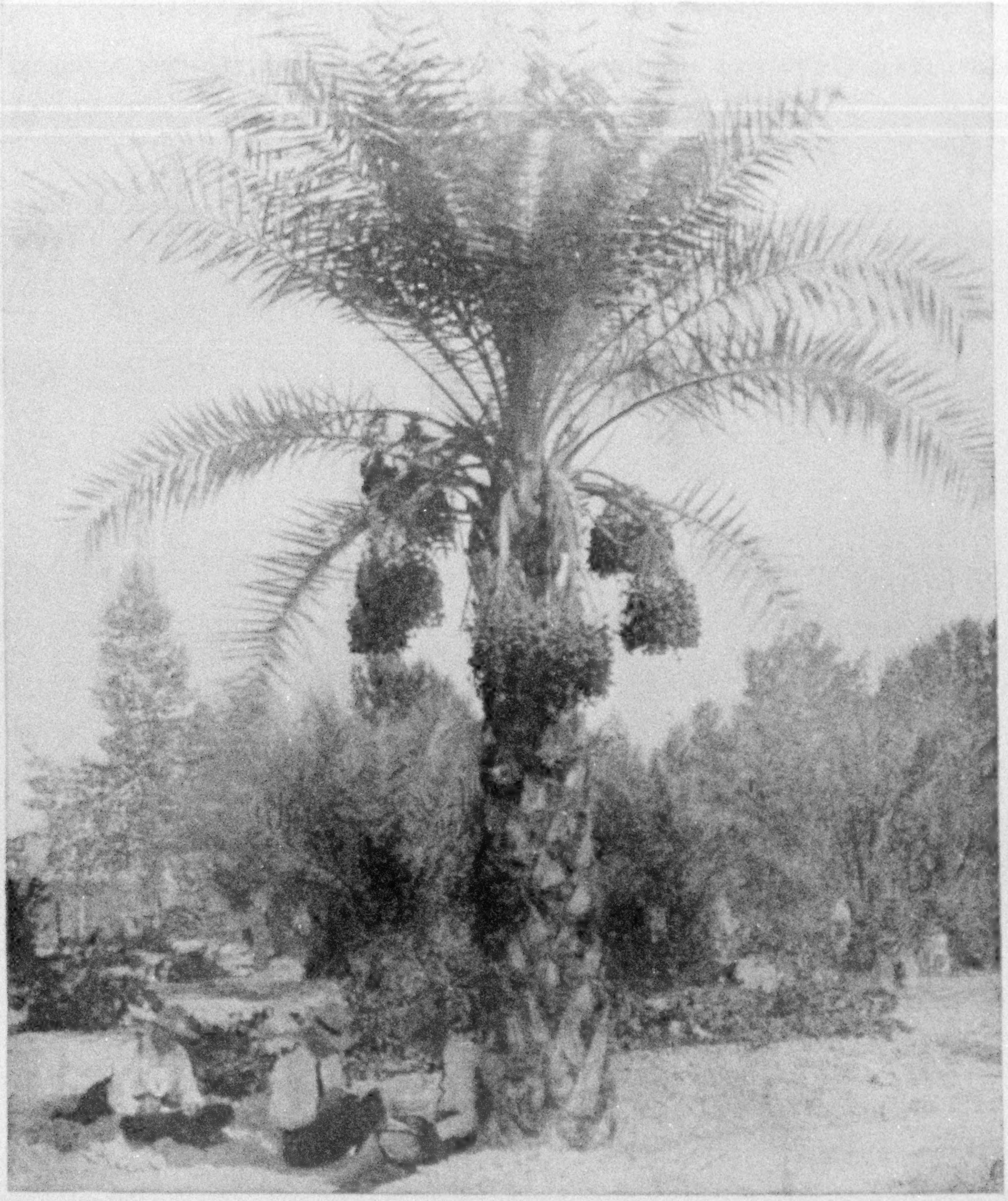
The region which I speak of is almost the last part of the surface of this globe

DATE GARDENS IN NORTH AFRICA (SEE PAGE 291)

which remains unutilized. You have all noticed how rapidly the population of the globe has expanded and how rapidly it continues to expand, and how it looks as if before very long, within the course of a century or two, there will hardly be upon many parts of the world comfortable standing room left for the population.

THE VAST UNEXPLORED REGIONS OF SOUTH AMERICA

It therefore becomes of greatest importance to ascertain what regions can be made available for producing food and for the habitation of man that have not been touched as yet. The largest of those, I suppose, is to be found in the vast central area of South America, which consists of the basin of the great River Amazon and the basin of the Puraná and other tributaries of the Rio de La Plata. You have there a region to be measured by many thousands of square miles, which is at present inhabited only by a few wandering Indian tribes, most of them in the very lowest stage of savagery. Latterly the bands of rubber gatherers have been penetrating into some of the districts, and it



DATE GARDENS IN NORTH AMERICA (SEE PAGE 291)

is to be feared in some districts working much evil upon these helpless tribes, whom they have forced into a sort of slavery. Rubber has become an article of great commercial value, and, as the owners of automobiles know, it has become a commodity in which there is a great deal of speculation and of which the price has latterly tended to rise.

This enormous area is traversed by gigantic rivers, but the navigation of these rivers is interrupted at some points, and at some of the important points where it is interrupted engineers are at work constructing railroads. A year ago I had the pleasure of meeting an American engineer in Bolivia who was at work on the shore of one of these rivers for the purpose of opening up its territory by making a line from the lower navigable parts to the upper. This enormous region, almost as large as the United States, leaving out Alaska—for it includes a very large part of Brazil and large parts of Bolivia, Peru, Ecuador, Colombia, Paraguay, and Argentina—is very hot and it has a very wet climate.

In the rainy seasons the great rivers that traverse it rise so that they flood

their banks for fifty, or one hundred, or two hundred miles on each side, and it has been usually supposed by those who have explored this country along the rivers that, owing to these floods and owing to this climate, it would be impossible to turn the country to account, because the amazing energy of nature, making things grow faster than they can be cut down, renders it impossible to keep the land open for the service of man. I have been told there have been recently discovered all through this area elevated grounds which are perfectly fit for human habitation and cultivation and where settlements can be established. When that has been done it will be possible to consider the still larger problems of reclaiming the lands below and making them also available.

I suggest this to you as one of the most interesting and remarkable problems which will remain to be solved during the next fifty years. With all the resources of geographical science, including those branches allied to it, such as botany, geology, and meteorology, it will be the task of geography and those allied sciences to consider this South American region from the point of view of its adaptability to human use, and there will be nothing more interesting for those of you who are still young than to follow and to watch during the next fifty years the process of seeing what human science can do to reclaim these lands for the service of man. I suggest this to you, ladies and gentlemen, as one of the new fields into which geographical science will advance, one of those directions in which our powers of invention and application will be tested. I say that with particular pleasure to you here, because you belong to the nation that has completed the greatest work man has ever attempted upon the surface of this planet.

PANAMA CANAL

Nobody can visit the Isthmus of Panama; nobody can look at that canal and its immense locks, and at that wonderful cutting through Golden Hill at Culebra; nobody can think of the history of that Isthmus and the results which the opening of the canal may have on commerce, politics, and international relations of the great peoples of the world, without feeling that you have done a work such as has never been done before, and such as can never be done again, for there is no other isthmus whereon to do it.

As this may be deemed to be an appropriate opportunity for me, I would like, if I may presume to do so, to say on behalf of my countrymen, who have also had a great deal to do in exploring the outlying parts of the world and in helping to carry forward civilization and to open up commerce along many lines—how much we appreciate and how much we admire what American energy and skill prompted by an altruistic regard for the interests of the whole world has been doing at Panama. It is with high ideals before your minds that you have undertaken this work, trusting that all mankind will profit by it, and when the Isthmanian Canal has been opened to the commerce of all nations on equal terms the world will feel that you have done for it a service never to be forgotten.

THE TOASTMASTER, DR. BELL

I am sure we were all interested in His Excellency's remarks about the great work done by our agricultural department. Before introducing the next speaker I would direct your attention to one of the products of plant immigration into the United States. You will find upon the table in front of you a souvenir of American-grown dates, and if you think that it is an easy task to introduce plants from abroad into this country read the little story of exploration that shows the history of those dates (see pages 278-279).

There is no part of the earth's surface that is attracting more attention at the present moment than Persia. We are all interested in Persia, the land of romance of the past, and now our heart goes out to Persia in her troubles I am sure that we shall listen with great interest to the remarks of the present representative of the Persian people in America, Mirza Ali Kuli Kahn.

MIRZA ALI KULI KAHN, CHARGÉ D'AFFAIRES OF PERSIA

Mr. Bell, ladies and gentlemen of the National Geographic Society: It is indeed a high honor conferred upon me by this Society to invite me to say a few words to you this evening. It may be because I belong to a nation which is one of the oldest occupants of a geographical situation on this earth that I have been called upon to contribute a word or two to the discussions of this evening.

What may be looked upon as most appropriate to touch upon in the course of the remarks I am going to make would be the inner side of the activities of this Society itself. The outer and scientific side of it has been so thoroughly represented by the speakers before me that you might perhaps be interested now to hear something of my understanding of the inner aim of this Society. To me, the chief duty and activity of this Society is its moral and spiritual efficiency—chiefly the work it is doing for the peace of nations.

From time immemorial there have been here and there men who have been seeking knowledge by travelling throughout the world, believing that by so doing they would be able to secure knowledge and diffuse it among their own people, and thus make the knowledge of one nation common to another, and prepare the way for a day when a better understanding shall exist between the nations of the world.

Belonging to an ancient nation, I may call your attention to the records of our history, which starts from a remote antiquity. As far back as 260 years before the deluge of Noah, there lived in Persia King Tahmooreth the Div-band, the king who subdued the demon of evil. He is famed for having transformed it into a horse and ridden upon its back, and the old records affirm that as long as he lived and rode upon the back of that horse evil had no activity and peace reigned. He is also looked upon as the first man who gave us the alphabet, the letters, and bestowed the arts upon the people of my country.

Later on in our history we find other instances of men who, actuated by the spirit of search for higher knowledge, journeyed far in order to secure and introduce it among their own people for the enlightenment of their own race.

Among such men three stand lofty, especially before the eyes of the western world, because of their connection with the spiritual history of the Christian nations. I refer to the "Three Wise Men" who went over from the southern city of Kashan, 120 miles south of Teheran, led by the stars of guidance into that land and into that humble village wherein the greatest Prince of Peace was born to illumine humanity.

Another instance preceding that period by over four centuries is that of the great Kings Cyrus and Darius, the first beneficent act of whose reign, in order thereby to express to the world their love for peace, was to give liberty to the people of Israel whom they found in the Chaldean captivity, and to send them back, under their own leaders, to the land of their fathers, and to defray the expenses of the restoration of the glorious temple of Solomon, which was destroyed by Nebuchadnezzer some seventy years before.

Thus they demonstrated to the world their love for peace, because one might almost take that act of generosity by Cyrus as due to a prophetic insight into the future of that race which was to produce the Prince of Peace for the world. It was for this consideration that the prophets of Israel spoke of Cyrus as the "Anointed of the Lord" in the Holy Writ.

Even in the introduction into Persia of the religious movement of the Arabian Prophet we find a further trend towards search for higher knowledge and a reaching of the hand for the higher, the better. For the Persians carried out the saying of the Arabian Prophet, "Seek ye for knowledge, even though it be necessary to go to China." You have this statement of the Arabian Prophet, which clearly contradicts the saying attributed to Kaliff Omar in connection with the reported burning of the Alexandrian library.

It is not to be considered that this

spirit, in the people of Persia, of search for knowledge ended with the old Persians. No! It is due to this same spirit of desire for the knowledge of the present times that we find the Persians of today seeking with the utmost humility the highest things of modern civilization. Yea, it is this spirit which has compelled them to kneel before the principles of the great fathers of western liberty, and eagerly absorb those liberal ideas, which has enabled them, not in the course of a century, not in the course of fifty years, but in the course of six years, to establish amongst themselves a free form of government which has commanded the respect, the sympathy, and the admiration of the liberty-loving and truth-seeking nations of the world.

There was a time in the world's history, my friends, when peace, in a universal sense, was the furthest point from the mind of man. We see that in about seven or eight hundred years before Christ the wisest among the Greek philosophers, called Thales, would boast of the fact and pray to the gods that he was born a "Greek" and not a "barbarian." They were so set in their ideas, those ancients, that they glorified in a magnificent aloofness from the rest of the world.

Today, on the contrary, the highest thinkers and exponents of the moral energy of humanity advocate the brotherhood of men. Such earnest advocates are not fanciful dreamers, but they are the great law-givers, law-makers, and executives of the human race. Among those great executives you people of this great country are to be especially congratulated, because among the noted executives of the world the great President of the greatest republic the world has ever seen is the chief exponent and standard bearer of the cause of international arbitration. Not only an international arbitration in the sense that the ancients understood it, to wit, that two strong nations would come together and become friends in order to crush their weaker brother, not at all in the sense of the survival of the strongest, by which "the strongest" was often meant the one who could further weaken his weak brother, but in the sense of the lordly man whose strength lay in his ability to strengthen his weaker brother into higher strength.

It is for this positive nature of your activity that you and your great President are exalted and praised among the people of this world, for you are the standard bearers of that noble cause, which is the chief aim of this enlightened century. I thank you.

THE TOASTMASTER, DR. BELL

A message from one of our most distinguished members, President Taft. The President had intended to be with us this evening, but owing to the very inclement weather and a lingering cold his physician has forbidden him to go out. He wishes the Society continued success in its splendid work, and exceedingly regrets not being able to be with us. President Taft has honored the Society by attending three of our gatherings since he became President of the United States, and our disappointment is great that we cannot again welcome him tonight.

As we cannot afford much time for introductory speeches, I shall merely say that our next speaker is one who is abundantly able to speak for himself. I must confess that it is with some fear and trembling that I venture to introduce Doctor Harvey W. Wiley. However he may comment on our dinner and the pure food offered for our consumption, let me assure Doctor Wiley in all seriousness that we look upon him as one of the great benefactors of our country.

DOCTOR HARVEY W. WILEY

Mr. Symposiarch, Your Excellency the British Ambassador, Ministers of Foreign Countries and Angels of Grace of Washington: I can assure you, Mr. Toastmaster, that your fear and trembling was by no means equal to mine. This I may say is my début as a speaker on geographic subjects. I rely upon that great rule of oratory, ignorance, which has always been such a "present help" to the orator. Just in proportion as our knowledge increases our eloquence diminishes, and I am ambitious, in so

far as mere oratory is concerned, to be one of those, as was said of another speaker, who depends on his imagination for his facts and on his memory for his eloquence.

I was particularly impressed with the delicacy of the invitation which I had to speak here tonight when Mr. Grosvenor told me I might have six minutes. As I am known as an after-dinner speaker who never uses over four or five minutes, I consider that a compliment and an invitation to extend my remarks. The story of the growth of the Society as told by the toastmaster touched me greatly, because when this Society began to grow a very intimate friend of mine who resides in New Orleans sent me a letter and enclosed in that letter a number of postal cards, and asked me to take the matter up with the Post-Office Department. He said a certain organization, which he was certain was a fake organization, was trying to secure two dollars from him under false pretenses.

I followed with great interest the remarks of the Ambassador from Great Britain and the story which he gave you of the discovery of the interior of South America, in a country where he says there are only a few wild bands of Indians. I have just read a story of that country and am sorry to say those Indians are what you would call collateral cannibals; their chief food is monkey.

I am glad that I live in an age when it is not necessary longer to wander into distant regions to learn geography. All we have to do now is to sit still in easy chairs and our great men bring the world before us. Last year I had the great pleasure of hearing Admiral Peary lay bare the secrets of the North Pole in such vivid language and with such perfect satisfaction that I at once gave up my desire to visit that locality. A short time ago I sat in a comfortable seat in a theatre and saw the whole of the gorgeous parade of the coronation of King George the Fifth, all for the small sum of five cents. One week ago tonight I went with Professor Nitobe over the whole of that beautiful Island of Formosa and saw it in all its beauty and grandeur, at a smaller sum than five cents. So all that we have to do is to sit still and let the world come to us.

Do you know that the first wanderings of man, the first geographical explorations were caused by that universal need, food? If man had not needed food he would have still been an animal *in situ* and would have never moved from his domestic realm. It was the desire for food that first led man to wander, and it is that same desire that impels most of the exploration today. Just as the Ambassador said, we do not go into Brazil for the fun of it, but go there to get a greater supply of food for mankind.

However, we only have to sit down to a banquet, as here tonight, to have the geography of the whole world unfolded to us. We have olives from Italy, we have tea from Japan, we have coffee from Arabia, we have wine from the Rhine and the Gironde, we have meat from Chicago, we have butter—no, we have no butter because the small price of five dollars per plate would not permit it. But, thanks to Mr. Burleson, we can have low-taxed oleomargarine next year. And so the whole world passes in review. I was struck with the delicate compliment to me that my name was printed right on the program, though pronounced wrong. I was pleased with the fact that at least one of the dishes we have had tonight was safe and sound, namely the "sound oysters." I hope that is no reflection upon the rest of the program. But even a meal like this is nothing but an exploration, and we are all on voyages of discovery.

We sit at a table delightfully spread
  And teeming with good things to eat,
And daintily finger the cream-tinted bread,
  Just needing to make it complete
A film of the butter so yellow and sweet,
  Well suited to make every minute
A dream of delight, and yet while we eat
  We cannot help asking "What's in it?"

O maybe this bread contains alum and chalk,
  Or sawdust chopped up very fine,
Or gypsum in powder about which they talk
  Terra alba just out of the mine;
And our faith in the butter is apt to be weak,
  For we haven't a good place to pin it.
Annatto's so yellow and beef fat so sleek,
  Oh, I wish I could know what is in it!

The pepper perhaps contains cocoanut shells,
  And the mustard is cotton-seed meal;
The coffee in sooth of baked chickory smells,
  And the terrapin tastes like roast veal.
The wine which you drink never heard of a
    grape,
  But of tannin and coal-tar is made,
And you could not be certain, except by the
    shape,
  That the eggs by a chicken were laid.

And the salad that bears such an innocent look,
  And whispers of fields that are green,
Is covered with germs, each armed with a hook,
  To grapple with liver and spleen.
No matter how tired, and hungry, and dry,
  The banquet how fine, don't begin it
Till you think of the past and the future and
    sigh,
  Oh! I wonder, I wonder, what's in it?

THE TOASTMASTER, DR. BELL

Our next speaker is our own Vice-President, Mr. Tittmann, the head of the Coast and Geodetic Survey of the United States, and he surely needs no introduction to his own Society.

VICE-PRESIDENT O. H. TITTMANN

Mr. Toastmaster, ladies and gentlemen: It is the plan of the managers of this Society to have at its annual dinner at least one address which shall present some important aspect of geographic science.

Descriptive geography has readily commanded the attention of the reader, whether he lived in the time of Herodotus, of Humboldt, or of the NATIONAL GEOGRAPHIC MAGAZINE. My theme, however, relates to certain fundamental operations concerning geography which are not well known and the importance of which is not as well understood, though they mark the progress of civilization. These operations furnish us with our knowledge of the size and figure of the earth, which is the very foundation of geographic science. Through them it will ultimately be possible to introduce uniform accuracy in the map of the world, now being constructed by international coöperation on a uniform scale. They are of far-reaching importance in many fields allied to geography. Through them we measure the distances of the heavenly bodies by means of a yard-stick.

In the absence of our accustomed lantern slides, let me ask you to picture to yourself a globe on which you will note that three-quarters of the surface represented is water and only one-quarter land. The trigonometric surveys conducted on this one-quarter of the globe by the various governments of the world are the basis of all mensurational geography. Picture to yourselves the network of existing triangulation depicted on the globe and you will find all Europe, excepting Turkey and the Balkan States, well covered. Russia has extended a thread of triangulation eastward into Asia. The great trigonometrical survey of India has covered that vast country with a monumental survey. The Federated Malay States are extending their triangulation. Holland has covered Java. The United States is at work in the Philippines. Japan, as usual, is not behind in the extension of its triangulation. The French, in coöperation with the Spaniards, have crossed the Mediterranean with long triangles, and have done remarkable work in Algiers. You have all heard of the Cape to Cairo Railroad, but few know that the British are triangulating southward through Egypt and northward from Cape Town and through Rhodesia, and the Germans will doubtless fill the link which extends through their sphere of influence. The Australians are also at work.

Coming to our own hemisphere, we find that the United States has an extended trigonometric survey. Canada has but lately organized one, and has already begun to fix its geographic coördinates by the trigonometric method. Mexico has a commission for the same purpose, and has extended a triangulation through about 10 degrees of latitude and will connect with the triangulation of the United States. Central America is a blank. In Peru a small triangulation, famous as having been measured by the French in the 18th century and remeasured by them with greater refinement a few years ago, serves but to show how much remains to be done. The Argentine Republic and Chile are just beginning operations.

The upshot of the review of these activities is that accurate or dimensional

A TURKISH OFFICER IN TRIPOLI

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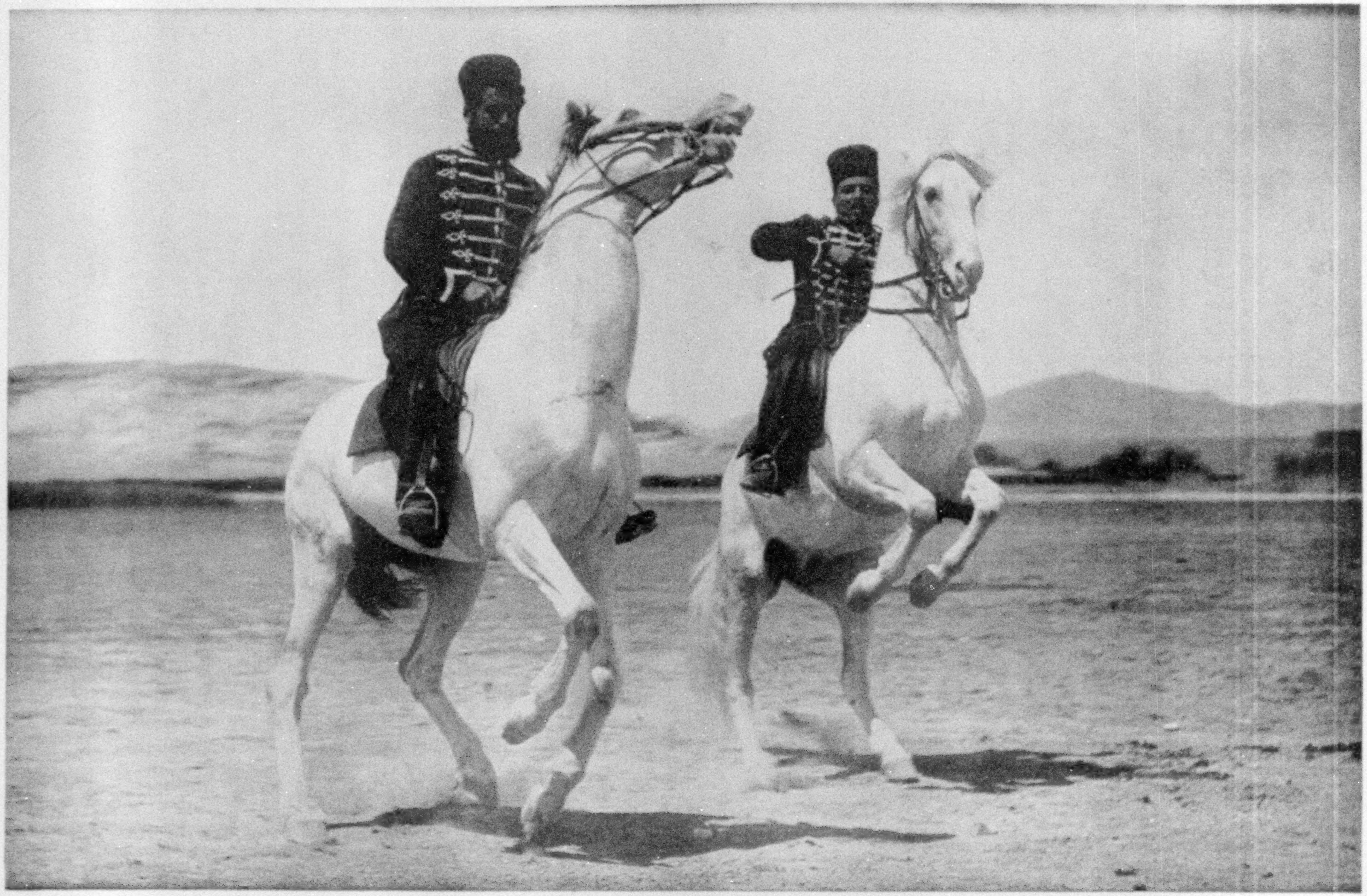

TURKISH OFFICERS OF TRIPOLI

geography is only in its infancy, and that by far the greater part of the globe is from this point of view still in the class of exploratory surveys.

Permit me to return to our own country for a moment. The needs of the government required surveys from time to time in separate parts of the country. We may instance those of the coasts, the lakes, the Mississippi River, and of the interior in general. The only way in which the detached surveys could be properly related to each other was by joining them with a network of triangulation, which has resulted in a uniform system of geographic coördinates which may be extended over Canada, and in fact over the whole of the North American continent, by the governments concerned.

How fortunate we are in respect to this matter will appear if we consider the conditions under which the European triangulations were developed. In each of the autonomous governments of continental Europe independent systems were carried on, and, what was worse, they were based on incommensurable or at least different units of length. This condition resulted in the formation, about 50 years ago, of the European Geodetic Association. One of the first fruits of its activities was the creation of an international bureau of weights and measures, which was designed, among other things, for the intercomparison of different units of length. This inter-European Geodetic Association soon broadened its scope and invited other than contiguous nations to join it for the avowed purpose of furthering the measurement of the earth.

All the great powers of Europe, by formal conventions, now recognize this association and support its undertakings. But not only the great powers of Europe, for Canada, the United States, Mexico, and Argentina have joined it, and Japan has set the example for Oriental nations by very active participation in the deliberations and execution of the projects of the association. It assembles every three years, and delegates come from all parts of the world to study and report on the progress made; to discuss methods and to recommend things which are desirable or necessary, and to coöperate in those things which are beyond the power of any one nation to achieve. And wherever there is international coöperation one may look for great progress.

The nature of the scientific questions discussed may be illustrated by the case of the Cape to Cairo triangulation, in which various nations are concerned. The association declared that it is most desirable that it should be accomplished. Another case is the junction of the surveys in India with those of Russia. Fifteen or twenty years ago it was thought that this highly important work was an unattainable ideal on account of political considerations. At the present time these particular difficulties have disappeared; but, to make the junction of these surveys, it would be necessary to establish stations in Chinese territory. It is therefore hoped that that ancient country will join the International Geodetic Association, and thus help in the great work to be accomplished and which is of such vast interest to geodesy and to geography in fixing on the maps the boundaries in their existing geographical relation.

The time will come when existing political boundaries will be defined by their geographic coördinates, and future generations will then be able to reproduce the political geography of the past without relying on the speculations of the archeologist or the historian, and I trust that when such boundaries, which the science of the day has fixed, are changed, it will be done only with the approval of the enlightened people of the whole world.

THE TOASTMASTER, DR. BELL

If there is any question on which I should like to expand, if it were not for the lateness of the hour, it is the great work of the American Red Cross Society. But it is unnecessary for me to expatiate upon the subject at all, for we have with us tonight no less a person than the Chairman of the National Relief Committee of the American Red Cross, Miss Mabel Boardman.

MISS MABEL BOARDMAN

Mr. Toastmaster, ladies and gentlemen: An affinity exists between the Geographic Society and the Red Cross of which you may not have been aware. Were you asked to bound the territory of the former Society would you not bound it on the north by the North Pole, on the south by the South Pole, and on the east and west by itself? So, too, you may bound the territory of the Red Cross.

I have noted in the NATIONAL GEOGRAPHIC MAGAZINE, that delightful picture book for us "children of a larger growth," that the Society has a fondness for rambling far afield, and so following its "wanderlust" spirit I am tempted to ask you tonight to take a little journey with the Red Cross into foreign lands. The Red Cross cars, doing their splendid work of teaching first aid to the great industrial army of our country, cannot carry us to these distant fields; good old Hans Christian Andersen's moon would be too slow a fellow-traveler, and I fear Dr. Bell might think us too weighty a body for the tail of one of his famous kites. Let us, therefore, all turn aviators for the nonce, and without fear of any Darius Green mishaps borrow that safest and most ancient of aëroplanes, the Flying Carpet of Suleiman, and the wind will waft us whither we will.

Rising from this banquet hall, our green and jeweled monoplane soars away to the southwestward to give us a passing view of the Mexican border. A perplexing problem met the Red Cross there. Insurrections bring parties into existence which are not signatory powers of the Treaty of Geneva, yet parties without an organized medical personnel. Under such conditions the Red Cross must exercise extreme care not to grant the use of the insignia to many who may express the desire to carry on a humane work on foreign soil. Let the emblem once be discovered in such an abuse as protecting the transportation of ammunition and its value is seriously impaired if not completely nullified. But caution did not mean inactivity.

In southern California we watch the women and children driven across our border by a state of anarchy, comfortably cared for in a camp settlement; funds are sent General Bliss to provide for the wounded; in Douglas we find a temporary hospital established, and at Juarez, where some hundreds of sick and wounded are in dire need of aid, General, now President, Madero welcomes the American Red Cross, with its doctors and nurses, until the Mexican Red Cross can itself take charge.

A wish, and the pilot-wheel of our aëroplane turns us to the southward, to hover for a moment over those mighty locks, those immense dams, the vast Culebra Cut—over that most wonderful feat of engineering ever undertaken by man—until gazing down we thrill with justifiable pride. Had we reached there two weeks ago we could have heard the fine, inspiring spirit of that Titanic work, Colonel Goethals, give a report on our Canal Zone Chapter, so ably organized and carried on under Colonel Devol's chairmanship—a report given before not only the President of the Panama Republic, but before a host of those men who are building the canal, and who, as Colonel Goethals said, without rich men or millionaires among them, are capitalizing the charitable instincts of the American colony and enabling it to act as a unit in any emergency at any moment.

Look down below us, at Colon, where last March a fire left some 3,000 homeless and destitute, and listen to Colonel Goethals tell of the relief the chapter gave these poor people with the funds raised not only by itself from its generous members, but with the $5,000 the Panama government appropriated and entrusted without restrictions to this chapter to administer.

When some tall, young constructionist in the Culebra Cut tells you he belongs to the Red Cross, or some strong, manly foreman stops his car in the Gatun locks to half shyly inform you he is a Red Cross member, you will feel the glow of honest pride that these men are working not only with American brains and American hands, but giving with the

warm American heart for human suffering; that the makers of this great canal are putting some of the earnings of their labors into work for their fellow-men.

But we may not linger, for the wind sweeps us onward to the east, and our Flying Carpet hardly pauses for us to glance below at Tripoli, where last winter the Red Cross helped many Jewish victims of cholera and famine, before again it wings its flight to Montenegro to show us for a moment the Albanian refugees, for whose relief our Red Cross sent funds to the Montenegrin Red Cross, which did so much in their behalf.

Again our winged steed hurries us onward to the land of its own beloved Koran and lingers over Stamboul to recall to us that here our Red Cross lent a friendly hand to the suffering Mussulmen when the fire last year laid so much of their city in ashes. Neither race nor creed does the Red Cross know; only suffering humanity.

A word to the wind, for our time is brief, and it carries us swiftly away to the far eastern isles, where floats a flag we know and love. There from the picturesque lake in southern Luzon rises that strange but deadly little volcano of Mt. Taal.

Only last March, like some monstrous dragon, it quivered and muttered, and then early one morning poured forth with blasts of fire and ashes its venomous fumes to overwhelm the people of a score of tiny villages clustered along the shore. Over 1,300 were destroyed in a moment's time, and the green and tropical hills and valleys turned into a barren waste of gray desolation. Accepting only $1,000 from our Red Cross treasury here, the Philippine Chapter raised fourteen thousand more, with which it cared for those who escaped the fury of the devastating volcano.

Turning, now, northward in our flight, let us stop for a moment at Manila to gather up Dr. Strong and his assistant, Dr. Teague, that we may see at Mukden the field of their labors for the Red Cross. We, safely up aloft, may watch them in the heart of the pneumonic plague district, dressed like misericordia brothers, moving through hospital and laboratory, studying at the risk of their own lives this most fatal pestilence—studying it so well that when the international commission meets Dr. Strong proves its leading member in the successful suppression of the epidemic.

Does the wind with a moaning note warn us of sorrow and despair as it drives us southward? Creep to the center of our jeweled carpet that you may not glance over its gold-fringed borders, or else steel your hearts to the saddest scene of all, so appalling in its vastness of human misery, in the depths of human suffering.

Once more last winter famine stalked through central China, and again today its deadly grasp is laid upon hundreds of thousands of men, women, and children. Up and down the highways wander a starving multitude. Here a man wasted by hunger, carrying a dying mother from some distant village, stops to beat his head on the doorstep of a house as he begs in vain for work or food. There a gaunt, hollow-eyed woman holds a famished baby to her breast, while clinging to her skirts are pitiful children, whose little legs tremble as they walk, in the weary search for aid. Think of the mental agony of such men and women who must witness helplessly the sufferings of those they love. In desperation some of these honest farming-folk have become robbers and plunderers; hundreds of them every month forfeit their lives for their crimes. The children that survive are growing up to lives of beggary and vagrancy, so often has famine succeeded famine.

Not content with its efforts to alleviate some of this untold suffering, our Red Cross last spring offered to the Chinese government the services of an expert engineer on river conservancy to study and report on the prevention of the floods that cause those oft-repeated famines. For six months Mr. Jameson, the Red Cross engineer, with 30 bright Chinese assistants provided by the Chinese government, has been at work on the Yellow River, or Hwai River.

It is satisfactory to learn from his preliminary reports that he believes the building of power dikes and the deep-

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ening of water-courses can prevent any usual floods and, moreover, reclaim great quantities of land for cultivation and provide work for thousands of famine sufferers.

In the meantime Mr. Jameson, Consul General Wilder, and Bishop Graves, of the Relief Committee, send the same terrible story of conditions in the famine district. Last year the Chinese government gave a million dollars for relief, but internal confusion and consequent business depression will prevent public and private contributions. Consul Wilder writes hundreds of thousands are in desperate need and the worst is yet to come.

Were it not for two new hopeful factors he would not repeat his cry to feed these hungry people. First, the relief funds will be expended for labor, according to Mr. Jameson's plans, providing work and at the same time repairing the dikes, both factions in China promising protection for the famine relief. The second reassuring feature is the fact that in the future the Chinese government will be in a better condition to care for its own, and an example of what can be accomplished will have been given it.

But after all—in the presence of need, suffering, starvation, and death—in the presence of facts like these, the wise saws of political economy, the deductions of the well-fed dinner company go flying to the winds. The man who loves his fellow-man, whose heart goes out to helpless, innocent children, cries, "I give what I can," and conditions only that it be applied to the best of human wisdom.

Has our little flight carried us among scenes too sad for an after-dinner story? Were it only to see the misery it would be so; but remember we fly the Red Cross flag, and under it the duty is not only to know the sorrow, but to know also the joy of helping those who suffer.

Even though our hearts are saddened, ere we turn homeward over the wide Pacific, we may smile on a passing picture in Wuchang of hordes of distracted Chinamen carrying all their portable goods to place them under the protection of some Red Cross flag.

And now that the Flying Carpet of wise old Suleiman has brought us safely back to this good land, will you not agree with me that the flag under which we made our flight—the flag to which the poor Chinese fled for protection, which has meant so much of help and comfort to our suffering fellow-men throughout the world—is a flag to which every one of us tonight, no matter what his race, no matter what his creed, may pledge his loyal fealty?

THE TOASTMASTER, DR. BELL

Japan has sent to America a great many students, who have gone to our universities and carried off our highest honors, and now she sends teachers to us, from whom we may learn. We are honored tonight by the presence of the great educator of Japan, Dr. Nitobe, of the University of Tokio, who is well known to us all as the author of Bushids, the work which has made known to us the high code of morality possessed by the Japanese.

DR. INAZU NITOBE.

Mr. Toastmaster, ladies and gentlemen: We are well aware under what obligations the toastmaster of the evening has placed the world, but the unabated admiration and confidence, as well as the curiosity, of mankind are still looking forward for further revelation of his genius, and I for one wish to ask a little favor of him. I wish him to add to the long list of his inventions, already pretty long, another: a new kind of phone whereby when one speaks in an unknown tongue his words, by the time they reach the ears of his hearers, may be so translated that all may understand him.

This is, of course, nothing new in the history of inventions. We are told, in a book which we are instructed not to disbelieve or to doubt, that once upon a time good Christians, apostles and fathers, made use of such a device on that memorable day of Pentecost. But ever since Christianity left the soil of Asia this precious art seems to have been lost. Perhaps you do not miss it out here, but I do very badly, and especially on an occasion like this, when I

feel promptings within my heart, when I feel my thoughts and sentiments rising and asking for a fuller expression in the presence of so distinguished and so cosmopolitan a company as this. And then we do miss it as a nation.

A poet of the British Isles, singing of the freedom of the Swiss mountain-dwellers, has written,

"Two voices are there: one is of the sea,
One of the mountains—each a mighty voice."

Now it is superfluous for me to remind the members of the National Geographic Society that Japan is only sea and mountains. Conclusion: that the voices of Japan should be doubly audible. Yes, I believe that her voice is audible, even at a distance separated by half the convex world.

But sometimes, in being carried over the wide ocean, it may sound a little raucous, as if the speaker had caught cold in the dampness; or sometimes, passing through the dry atmosphere of this continent, it may sound husky, as though it had proceeded from a rasping sore throat. Geographical conditions certainly affect the human voice. But the worst thing is that, for the want of a proper kind of phone, the words which the voice tries to convey may too often not be clear enough, and this want may become serious when our Oriental language, reaching the Pacific Coast, must first be translated by patriotic American citizens, so called, who somehow do not speak English themselves.

There is a term in our Japanese vocabulary which is of every-day use. It is not a new word, either. A shrill, screeching voice is called *"ki-iro-no-koye,"* which, literally translated, means yellow-colored voice; a voice indicative of excitement, or lunacy. Self-respect demands that we close our ears to it, whether it proceeds from that or this side of the Pacific Ocean.

I wish the American people would listen to the normal, sane, genuine voice of our people; for, with or without interpretation, you can easily understand that the burden of its message is heartfelt greetings to America, expressions of unalloyed good will, of traditional friendship, of respect for your country, of admiration for the name of Washington, adoration for Lincoln, and God-speed to the arbitration scheme of President Taft.

If there is no immediate prospect of regaining the lost art of that pentecostal day, I must beg the National Geographic Society to clarify the atmosphere of the Pacific Ocean, so that messages can be transmitted unimpaired. I believe geography owes much to language, and it ought to do what it can to alleviate the imperfections and inconveniences of tongues.

It is written that with the confusion of tongues among the builders of the Tower of Babel, the settlement of new countries—in other words, geographical exploration and colonization—began.

Dr. Wiley has just told us that it was in search of food that migration began; but, according to the good old Book, it seems that migration began for another reason, namely, simply because the people could not understand each other. It is not at all impossible that the two causes of the dispersion of the race were closely related. It often happens that hungry people fail to understand each other!

If history repeats itself, I take it for granted that it is the rules and exceptions of English grammar which are largely responsible for the expansion of the English-speaking race. But I am afraid that geography rather delights in setting bounds for dialects and languages, and therefore I hold geography responsible for the present state of linguistic confusion.

Pending the invention of the new phone or the return of Pentecost, why should not geography, national or international, put forth an effort to satisfy the demands for universal communication and communion? And this is my message and this is my question: What will geography do? What will the National Geographic Society do for the promotion of a better understanding of peoples and nations that do not exactly comprehend each other's language when, as we say, jingoes speak in yellow-colored voices?

Now I wonder if I have spoken clearly enough to be understood? If I have not, the greater the need of a new phone. If I have, it is largely due to the prospective invention of our toastmaster, to whom, and to the ladies and gentlemen present, I wish to express my hearty thanks for this instructive and entertaining evening.

THE TOASTMASTER, DR. BELL

Japanese was the first foreign language spoken through the telephone, and Japan has itself supplied the instrument for translating Japanese thought into English—Dr. Nitobe.

I am sorry to say we come now to the last speaker of the evening, one to whom we would like to listen for a very long time. We all have the interest of woman at heart, and who can speak so well on "the welfare of woman" as Mrs. John Hays Hammond, the President of the Women's Welfare Department of the National Civic Federation.

MRS. JOHN HAYS HAMMOND

Mr. Toastmaster, ladies and gentlemen: It seems a proper note to close this harmonious and splendid geographic dinner with the home note. I come to you the mother of grown sons, a woman who has known hardships, has suffered and who has lived. For this reason I feel that I have a right to speak to you of woman's work.

By a natural evolution of life woman's work today extends far beyond the home. Not restlessness nor pampered idleness, but necessity has forced her to undertake such service as the work of the Women's Welfare Department, to protect her home. And where is her home? A noted educator said recently, in addressing a vast gathering of women's clubs:

"If your children get into the juvenile courts, then your home extends to that. When the child goes to school, the school becomes a part of your home. If the street before your house is dirty, then that is a part of your home concern. If the dairyman poisons your child by impure milk, then the inspectors of dairies is a part of your home."

In spite of the fact that we no longer brew nor bake, that our sick are turned over to trained experts, and our infants are brought up by formulæ, the old home instinct, that God-given instinct is still burning in our hearts. Instead of our own household the whole human family now absorbs us.

Gentlemen, we have outgrown our back yards; the public highways and all the environment of a great city—its factories, shops, and tenements—are logically our present field of work. Into the dark corners of these places it is woman's keen eye which penetrates. It is woman's patient industry which is ready to sweep and make clean those spots which in the race of competition your man's haste has made you forget.

We realize that your future citizens are in the hands of the women for the making. We nurture not only our own children, but the welfare of every child in the nation is equally our concern, because in this country even the newly arrived immigrant is a possible governor or leader. We women in our welfare work meet the men and women of industry in the factory and mine. We help them to better conditions in life. We endeavor to bring about more kindly understanding and sympathy between employers and workers, so that they may arbitrate their differences when the time comes.

Woman has her place in civic life. The responsibility of welfare work will develop and educate her. Her task will be to establish order, peace, and righteousness in the community, as she has done for ages in the home.

We hear much in these latter days of woman's drift into the material and practical at the expense of sentiment and domestic life. It is my belief that woman cannot and will not sacrifice upon the altar of these new and widening duties the sweet, solemn responsibilities that bind her to the ancient and honorable faith of womanhood. Rather, she brings to the new work all the qualities which have made her the successful mother, wife, and home-builder. God made woman the mother in the home. The stress of present time and need is making God's woman a vital factor in civic life. It is

the maternal spirit of arbitration extended to the community which will make woman the beneficent and peaceful power welcomed by men to help solve the world problems of today.

This is no surrender of rights already achieved by woman, but a pledge that the old-time woman, whom through generations you have learned to rely upon and love, shall not be lost to you, but shall return to you glorified in the dignity of her new strength.

THE TOASTMASTER, DR. BELL

The best of meetings must come to an end and friends must part as well as meet. Success to the National Geographic Society, and may we all be spared to meet here again another year.

A STORY OF EXPLORATION

The dates which were tested by the members and guests of the National Geographic Society were grown in the Federal and State Co-operative Date Garden at Mecca, California, and were the first American dates ever served at a great public function.

The dates represented a story of exploration and agricultural investigation by our government as full of fascinating detail and as thorough from a scientific standpoint as any explorations ever conducted by any government.

They were American-grown dates of a variety which has become the most famous date of North Africa—the Deglet Noor—and they represent one of the more than 200 varieties now growing in the deserts of our Southwest. We have in Arizona and California more different varieties of dates than there are in any other one region in the world—dates tan, brown, purple, and black; dates small and dates large; dates dry enough to be carried in the pocket like nuts, dates so soft and syrupy that they must be eaten on the spot, and even dates for cooking.

The foreign-grown dates on sale in our shops are, for the most part, the soft, sticky varieties—just the kinds best adapted to catch and hold the flying dust and dirt of the Arabian villages where they are packed, and our cleaner methods of handling will undoubtedly aid the popularity of American-grown dates.

To get these dates into the country it has taken three expeditions to the Sahara, two expeditions up the Nile, one to the oases of Tunis, one to the oasis of Siwa—for 25 years unvisited by a white man—one to Bagdad, and one to Baluchistan; while to get them established in Arizona and California has meant years more of careful scientific work.

Not only the soils of the various countries from which the dates came, but the soils in which it was proposed to grow them, had to be studied that they might be compared. Temperature comparisons were necessary; experiments had to be made to see how much salt the date palms could stand in their irrigating water. So much of the detail of cultivation had to be studied among the Arabs that one of the explorers of the Department of Agriculture studied Arabic to facilitate his work.

Date-growing is an industry adapted to the small grower and homemaker rather than to the operations of stock companies or capitalists, because the palms are rather slow to propagate, and need a good deal of personal attention. The localities where the cultivation can be successfully carried on are limited in extent and scattered over southern California, parts of Arizona, and possibly Texas.

In an average year one tree will produce 40 pounds of commercial dates, which bring a wholesale price of 25 cents a pound. As one acre contains 50 trees, the average product will probably be worth $500 an acre. Trees in Africa often bear for a century.

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Representative and Mrs. Wyatt Aiken, of South Carolina.
Mr. and Mrs. Frank E. Altemus.
Mr. and Mrs. George C. Altemus.
Judge Thos. H. Anderson, Supreme Court of District of Columbia.
Mrs. Anderson.
Representative and Mrs. D. R. Anthony, Jr., of Kansas.
Hon. Allison V. Armour, of Chicago.
Mrs. E. T. Atwell.

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A BAG OF ALLIGATORS, ON THE PANAMA CANAL ZONE

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Senator Augustus O. Bacon, of Georgia.
Rear Admiral and Mrs. G. W. Baird.
Dr. George Barthelme.
Mr. Frank Barker.
Mr. and Mrs. Samuel N. Barker.
Mr. Virgil B. Barker.
Mr. and Mrs. D. A. Barrett.
Mr. Arthur F. Bauer.
Dr. and Mrs. L. A. Bauer.
Representative and Mrs. Richard Bartholdt, of Missouri.
Mr. Robert H. Beggs.
Mr. Claude Bennett.
Mrs. Eugenia P. Bennett.
Dr. and Mrs. Alexander Graham Bell.
Representative and Mrs. Victor L. Berger, of Wisconsin.
Mr. Emile Berliner.
Mr. and Mrs. G. A. Bisler.
Dr. John D. Blake.
Mr. and Mrs. C. J. Blanchard.
Colonel Baron de Bode, Military Attaché of the Russian Embassy.
Miss Mabel T. Boardman.
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Mr. E. E. Wrestling Brewster.
Mr. and Mrs. William J. Brown.
Hon. Wrisley Brown.
Mr. and Mrs. Aldis B. Browne.
Hon. James Bryce, The British Ambassador.
Mrs. Bryce.
Hon. H. H. Bryn, The Minister of Norway.
Madame Bryn.
Miss Alice Bukey.
Mrs. John Spencer Bukey.
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Miss Burleson.
Senator and Mrs. Henry E. Burnham, of New Hampshire.
Miss Emma Caldwell.
Mr. John W. Calvert.
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Señor Don Ignacio Calderon, The Bolivian Minister.
Señora de Calderon.
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Mr. R. Brooke Clokey.
Mrs. Sydney Cloman.
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Brigadier General Crozier's guest.
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General Maxwell O. Z. Woodhull.
Mrs. F. E. Wright.
Mr. George Young, First Secretary British Embassy.
Representative and Mrs. H. Olin Young, of Michigan.
Mr. Rudolph de Zapp.

AMERICAN DISCOVERERS OF THE ANTARCTIC CONTINENT

By Major General A. W. Greely, U. S. Army

"When I refuse, for any cause, the homage due to American talent, or abate the tithe of a hair from just character or just fame, may my tongue cleave to the roof of my mouth."
—Webster.

CLOSE on the news of the American discovery of the North Pole by Robert E. Peary comes by cable from Australia the intensely interesting story of the conquest of the South Pole by that chief of the Norse vikings of today—Captain Roald Amundsen. Entering the broad field of Antarctic research, with keen perception and sound judgment he has profited by the experiences of his British predecessors, introducing innovations as to equipment methods, field work, and lines of approach.

His wisely chosen route to the Pole was due to a sagacious recognition of the fact that the great oceanic ice-cap known as Ross' barrier, flowing from the southeast, is diverted from its course by the mountainous coast of South Victoria Land, whose outlying cliffs are ground by the almost irresistible force of the barrier.

The onward movement of this inconceivably enormous body of solid ice, estimated by some to have a superficial area of 100,000 square miles, naturally produces fathomless fissures in and great upheavals on the surface of the barrier bordering Victoria Land, while the eastern sections along the coast of King Edward VII Land remain in a state of comparative quiescence, with its surface unbroken by pressure and unmarked by crevasses.

Again should be noted Amundsen's originality in locating his winter home on the ice-barrier and his restless energy during the autumn in establishing advance depots on the colorless, unmarked ice-plain, with signals insuring their attainment after their burial by the winter snows.

While displaying high qualities of resourcefulness and unusual powers of endurance, Amundsen's human attributes

are most admirable and have won universal esteem and applause. One reads with pleasure the plain, straightforward story of his onward march and final success, told with unfeigned modesty, and further notes with intense satisfaction the absence of any assertive superiority over his friendly rivals, whose fortunes he views with a manly and generous spirit.

And so the whole world unites in homage of the highest character to this Norwegian sailor for his contributions to knowledge—contributions gained by such personal sacrifices of physical, financial, and self-denying character.

Another page of Antarctic history—which, though supplementary to the attainment of the pole, is of absorbing interest, especially to Americans—was written a week after Amundsen's return. A cablegram from Hobart, Tasmania, dated March 12, 1912, ran as follows: "The Australian expedition ship *Aurora*, concerning which there had been some anxiety, returned to Hobart today, after landing Dr. Douglas Mawson, the leader of the expedition and of the party, January 19, on Adélie Land, and another party under Dr. White (Wild ?), February 19, on Termination Land, discovered by the American Captain Wilkes, in 1840, on the edge of the glacier."

Among Antarctic explorers, Amundsen and Mawson would be the last to fail in homage to and in just appreciation of the invaluable work done during the past century by their predecessors. That work made possible the magnificent successes of Amundsen in reaching the physical Pole in 1911, and of Mawson's attainment of the South Magnetic Pole, in 1909, in 72° 25′ S. latitude, 155° 16′ E. longitude, and also his later scientific expedition to Wilkes' Southern Continent.

ENLIGHTENMENT ESSENTIAL TO NATIONAL HONOR

History reveals many instances in which not only individuals but also nations have failed to receive, or been temporarily deprived of, honor due for important additions to human knowledge or advances in the march of civilization.

When recorded history began, there were four continents unknown whose subsequent discoveries have been of unsurpassing geographic importance. As regards the two Americas, the rightful honor pertains to Spain, as is universally known. In the case of Australia, priority is unknown, claims being made by France, Holland, Portugal, and Spain.

With reference to Antarctica, through misinformation and neglect in the past, our countrymen have failed to pay "the homage due to American talent." The object of this brief memoir is to clearly and concisely present such facts as may conserve to America the rightful honor of both the original discovery of Antarctica as well as of first ascertaining and making known its definite existence as a continent.

Australian energy and courage, by the recent occupation of Termination Land for scientific research, have thus put an end to the anti-American campaign of many years' duration. During this period American honor has suffered from national neglect as well as from unwarranted assertions and disingenuous representations from foreign sources, thus beclouding the situation to American discredit. Moreover, claims have been made which attribute to European activities that priority of Antarctic discoveries which rightfully pertains to American explorers.

PALMER'S DISCOVERY OF THE ANTARCTIC CONTINENT IN 1821.

The earliest phase of American Antarctic exploration was due to the ambitious energies of Connecticut whalers, whose commercial and professional instincts impelled them to seek an extension of profitable sealing grounds. As is well known, the daring pioneer voyages of American fishermen successfully exploited in the 19th century even the most remote seas, and thus brought into our national coffers whaling products to the value of 332 millions of dollars from 1804 to 1876.

The discovery of the sealing grounds of the South Shetlands (see map, page 308) promptly attracted a fleet of New England whalers, which established its

base of operations at Deception Island, where seals were so plentiful that 50,598 sealskins were taken in one season, 1820-1821. The smallest vessel of the fleet was the sloop *Hero*, 44.5 tons, commanded by a youth of 21 years, Capt. Nathaniel Brown Palmer. While at the lookout maintained on the volcanic crater near Yankee Harbor, one of the sealing captains, Benjamin Pendleton, on a clear day discovered snow-capped peaks outlined against the southern horizon.

Realizing that the wholesale destruction of seals must soon exhaust the local supply, Captain Palmer, in an interval of fine weather, sailed southward, in January, 1821, to search for new fishing grounds. Reaching the new and hitherto unknown land, only some 70 miles distant, Palmer skirted its northwestern coasts, which he found to be a mountainous, snow-covered region, entered several bays, and saw sea leopards, though finding no seals. His farthest point in that voyage was about 68° S. latitude, 59° W. longitude. In his homeward passage Palmer fell in with the Russian exploring expedition commanded by Capt. F. G. von Bellingshausen, which, after an unparalleled voyage through Antarctic waters, had discovered the islands of Peter I and of Alexander. These were possibly the first seen, and certainly the first charted and named, land within the Antarctic circle. Palmer gave Bellingshausen full information as to his own voyage and discoveries.

Dr. Hugh Robert Mill, in his generally accurate and fair-minded "Siege of the South Pole," 1905, unfortunately follows the British attitude of indirectly discrediting Palmer's story as to the Russian admiral, saying (page 100): "It seems strange that if informed of the whereabouts of Palmer Land he (Bellingshausen) made no reference to that fact in his own book."

However, Dr. Henryk Arctowski, a Belgian professor, a Russian scholar, and an Antarctic explorer and expert, supports Palmer by a citation. In "The Antarctic Voyage of the *Belgica*" (in the *Geographical Journal*, 1901, 18:353-394), Arctowski states that "this meeting was also described by Bellingshausen himself, as can easily be seen by consulting the remarkable but still little-known work of that eminent Russian explorer (Dwukratnyja, 2:262-264)." It is to be regretted that Dr. Mill failed to verify the citation.

Mr. E. S. Balch, in his scholarly study ("Antarctica," Phila., 1902, page 95), admirably summarizes the results of Palmer's voyages. He ascribes to him, with undoubted accuracy:

1. Certainly the first explorer of the land lying south of Bransfield Strait, and extending for some 250 kilometers (over 150 miles) between about 57° 50′ and 62° 20′ west longitude; that is, of the northern coasts of West Antarctica from Liege Island to Joinville Island, both inclusive.

2. Discovered the northern end of Gerlache Strait.

3. Discovered the strait since called Orléans Channel. He also accurately adds: "This coast or these islands were christened Palmer Land, and they were so first charted in England, France, and America."

Palmer never realized that he had discovered a continent, and had thus placed his name among the immortals. Even after the discoveries of Wilkes, he claimed, in 1847, only the discovery of Palmer Land and the credit of sailing into the Antarctic Ocean to the distance of 340 miles southwest from Yankee Harbor.

However, Captains Edmund Fanning and Benjamin Morrell, contemporaneous whalers with Palmer, considered the land continental. The former writer says (Fanning: "Voyages," page 476): "From information that the author has in his possession it is presumed that the continent of Palmer Land does not extend further west than the 100th degree of west longitude." He adds: "It is reported that an extensive bank, with from 60 to 100 fathoms of water over it, has been discovered between the latitude of 66° and 69° south, to the westward of 140° west longitude, which may be con-

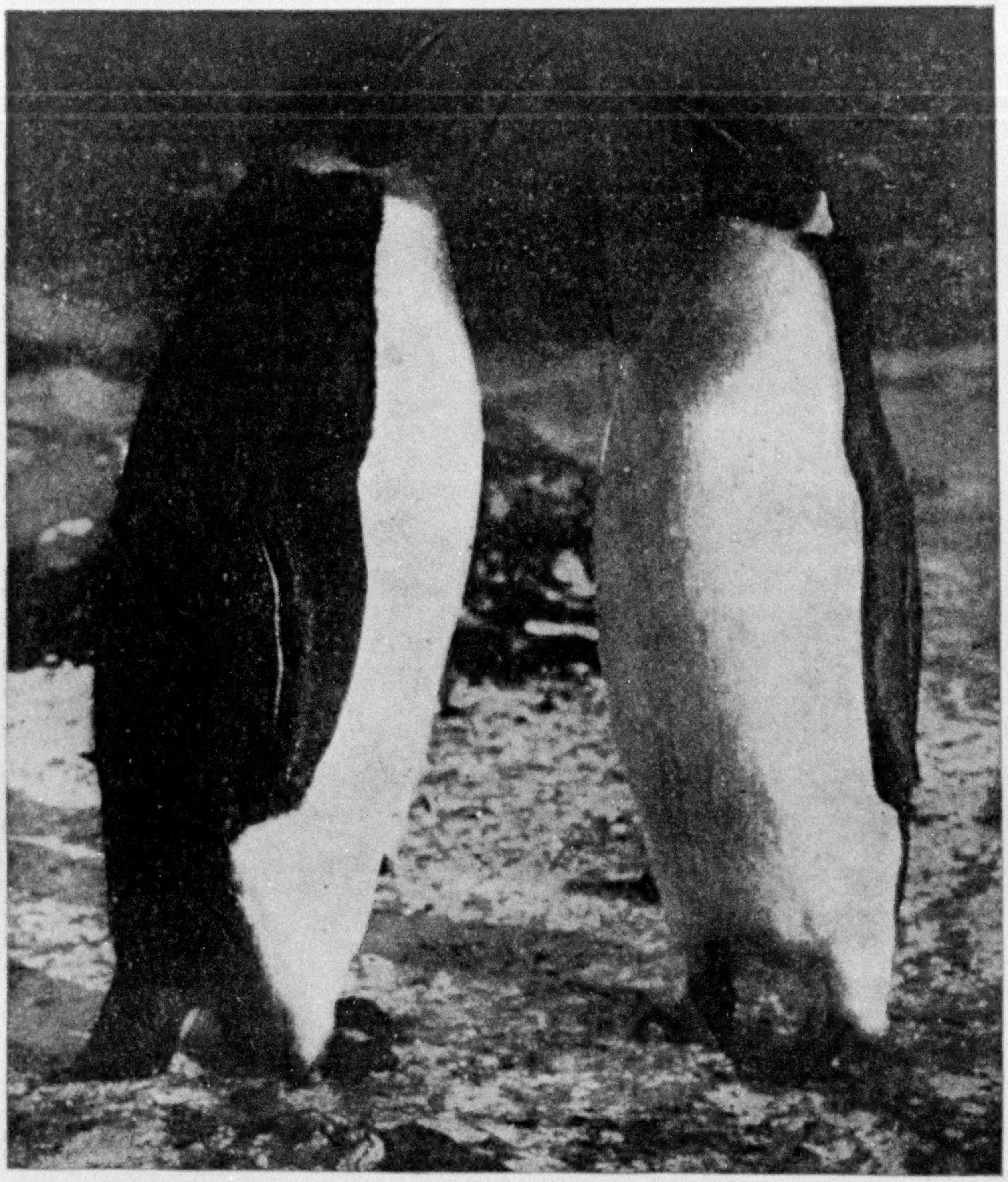


Photo by Sir Ernest H. Shackleton
From "The Heart of the Antarctic," by E. H. Shackleton (J. B. Lippincott Co.)

TWO EMPEROR PENGUINS ON SOUTH VICTORIA LAND

nected with extensive land to the south of it."*

Long designated as insular, the continental character of Palmer Land has been gradually proved through the discoveries of Larsen, 1893; of Nordenskiöld, 1903, and of Charcot, 1910.

As it is now acknowledged that this land is a northerly projection of the continent of Antarctica, to this American sea captain must be given geographic credit second to the other only known discoverer of a continent—Christopher Columbus—who no more than Palmer realized the greatness of his work.

*Attempts have been made to discredit Fanning, a sealer, making no claims to scientific accuracy in astronomical positions. His general statements are strikingly confirmed by the discovery by the *Belgica*, under Gerlache, of a continental plateau, from 75° to 103° W. (the *Belgica's* farthest), sloping gently to the south, with soundings from 100 to 250 fathoms. Unquestionably the plateau extends farther west.

HOW PALMER LAND BECAME GRAHAM LAND

Among the curious recurrence of parallels in history is the surprising fact that the only men who have discovered continents—Columbus, the unknown discoverer of Australia, and Palmer—should each have failed in receiving that highest form of geographical homage—the application of their names to the lands discovered.

A fellow-explorer, the English sailor George Powell, fittingly honored his American comrade by charting "Palmer Land" on his map of South Shetlands, 1822 (reproduced, Balch, "Antarctica," page 96), which nomenclature was promptly accepted in French official publications ("Annales Maritimes et Coloniales," Paris, 1824).

The just and accurate use of Palmer Land continued on the charts of the world until, in 1831, it was displaced by potent authorities. The Enderby brothers, of Great Britain, one of whom was an influential Fellow of the Royal Geographical Societ·, fitted out an expedition under command ‹ f John Biscoe, a retired master of the R‹ yal Navy, who visited the coasts of Palmer Land, whence resulted its replacement by Graham Land, renamed after the first Lord of the Admiralty, Sir James R. G. Graham.

The combination of the British government, of the Royal Navy, and of the Royal Geographical Society was overpowering, so that the name of the American captain disappeared from Antarctic charts, of which England then had a practical monopoly. The potency of the authority of the "mistress of the seas" and the insidious effect of this act of suppression and unjustifiable substitution can be traced through the geographic literature of the past 80 years. The *Encyclopedia Britannica*, 9th edition, 1875, mentions neither Palmer nor charts his discoveries.

Nor has the influence of such suppression been confined to Europe, as its effect has been often noted in this country. In March, 1912, one of the best-edited and most reliable of American newspapers published a long and detailed summary of Antarctic explorations, widely copied, in which neither the name nor the work of the discoverer of Antarctica is even mentioned. On the contrary, to the Russian explorer Bellingshausen is indirectly ascribed the honor which pertains to an American sailor.

One English author, Dr. Hugh Robert Mill ("Siege of the South Pole," 1905, page 162), expresses the opinion that "as a matter of historic justice it seems to us that Powell's name of Palmer Land ought to be retained," an opinion inseparable from any careful consideration of the facts.

The standard British authority for south-polar work is *The Antarctic Manual*, specially compiled for the governmental expedition of 1901, commanded by Captain R. F. Scott, R. N. It reproduces on its charts the tracks and discoveries of all the British whalers, including Biscoe, who appropriated Palmer's work. It omits from the charts Palmer's name, although the contribution of the Belgian professor, Arctowski, to the manual mentions Palmer Land in text and by sketch map.

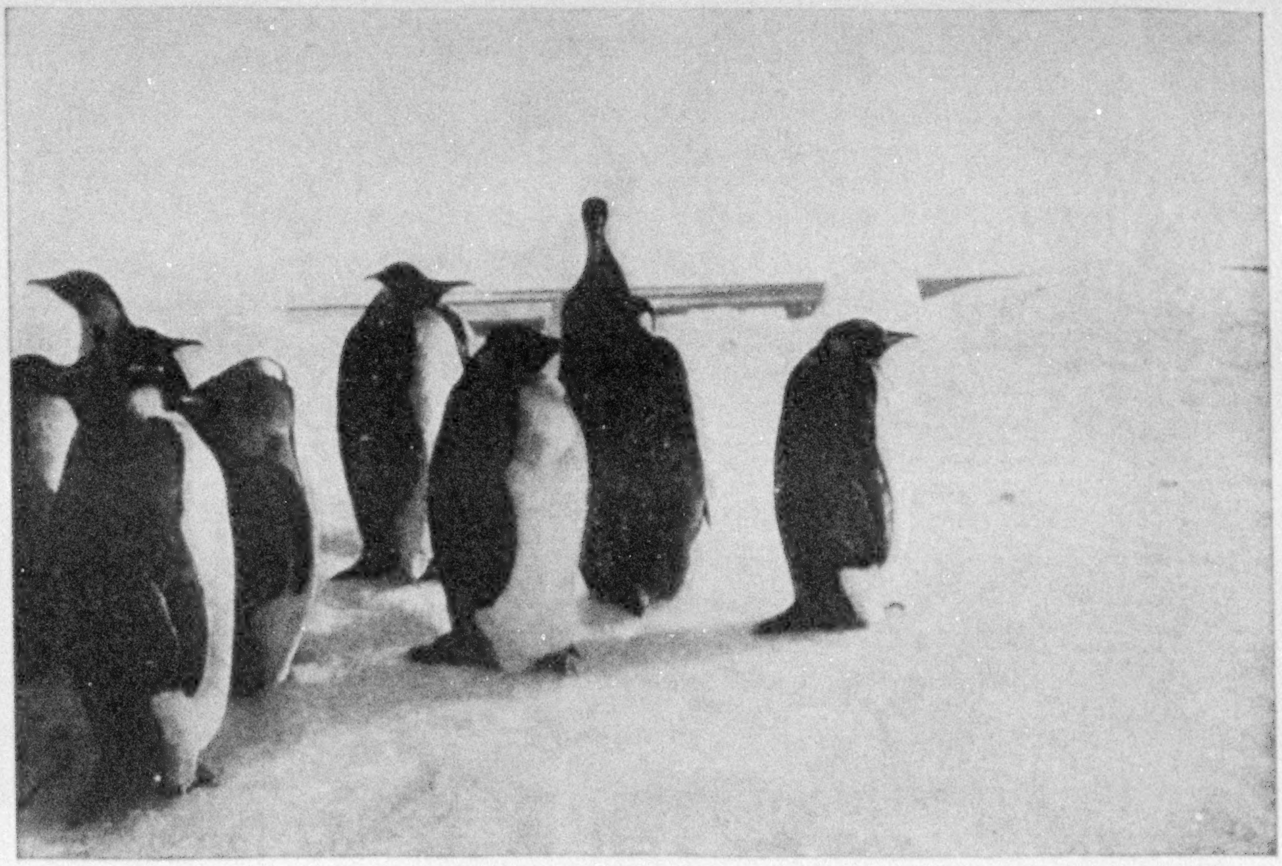
A concession is made in the *Encyclopedia Britannica*, 11th edition, 1911, specially Americanized for the United States, which admits in two lines that "Nathaniel Brown Palmer discovered the mountainous *archipelago* which now bears his name." It then proceeds to give a column regarding John Biscoe, R. N., whose explorations, as above recited, displaced Palmer Land in favor of Graham *Land*.

Has not the time arrived when the glorious phase of American maritime history should receive full national recognition? Every text-book teaching polar geography should contain the statement that the American captain, N. B. Palmer, first discovered parts of the continent of Antarctica, and on every official south-polar map should be replaced Palmer Land.

ANTARCTIC DISCOVERIES BY LIEUTENANT CHARLES WILKES, U. S. NAVY

We pass now to the American who discovered widely separated points of Antarctica. Realizing with scientific acumen their interrelations, he correctly

EMPERORS ON THE MARCH



Photos by Sir Ernest H. Shackleton
From "The Heart of the Antarctic," by E. H. Shackleton (J. B. Lippincott Co.)

EMPERORS AT REST

XUM

designated the new regions as the Antarctic Continent.

The Wilkes expedition for maritime exploration was authorized by an act of Congress approved May 18, 1836. As organized, it consisted of five unsuitable and inadequately equipped ships, of which the largest was the flagship *Vincennes* and the smallest the *Flying Fish*, 96 tons. The command was refused by several officers, but late in 1838 the squadron sailed under Lieut. Charles Wilkes, U. S. Navy. Scientific work was strictly subordinated to surveys and explorations, it being a commercial enterprise.

The official instructions of the Secretary of Navy, Paulding, August 11, 1838, ran in part as follows:

"You will proceed to explore the southern Antarctic to the southward of Powell's group, and between it and Sandwich Land, endeavoring to reach a high southern latitude, making such examination and surveys of the bays, ports, inlets, and sounds in that region (Tierra del Fuego) as may be serviceable in future to vessels engaged in the whale fisheries.

"From Sydney (at the end of 1839) you will make a second attempt to penetrate within the Antarctic region, south of Van Dieman's Land, and as far west as longitude 45° E., or to Enderby Land. The Congress of the United States, having in view the important interests of our commerce embarked in the whale fisheries and other adventures in the great Southern Ocean, by an act of the 18th of May, 1836, authorized an expedition to be fitted out for the purpose of exploring and surveying that sea.

"Although the primary object of the expedition is the promotion of the great interests of commerce and navigation, yet you will take all occasions not incompatible with the great purposes of your undertaking to extend the bounds of science and promote the acquisition of knowledge.

"You will prohibit all under your command from furnishing any person not belonging to the expedition with information which has reference to the objects or proceedings of the expedition."

While no mention was made of Palmer's discoveries, they were well known to Wilkes, who made Orange Harbor, Tierra del Fuego, his base of operations. With the *Porpoise* and *Sea Gull* he explored to the east. Leaving South Shetlands to the north on March 3, 1839, Wilkes reports: "Filled away at daylight, and stood for Palmer Land. . . . At 6:30 we made land, which I took to be Mount Hope, the eastern point of Palmer Land. . . . Near to us we discovered three small islets, and gave them the name of Adventure Islets, while beyond and above all rose two high mountains, one of which was Mt. Hope."

Violent gales and thick ice obliged a speedy return.

Meanwhile Captain Hudson, in the *Peacock*, and Lieutenant Walker, in the *Flyish Fish*, struggled southwestward from February 25 to March 25, with gales and fogs. Appearances of land (unconfirmed) were noted from about 70° 20′ S., 100° W.

The next Antarctic cruise was made from Sydney, Australia, the designated base. Wilkes sailed December 26, 1839, with the flagship *Vincennes*, the *Peacock*, the *Porpoise*, and the tiny pilot-boat *Flying Fish*.

This memoir does not concern the dangers and privations incident to this astonishing Antarctic cruise, from which one ship returned almost as by miracle. Nevertheless, unfitness of ships, insufficiency of clothing, inappropriate food, inclemency of weather, extraordinary ice conditions, and difficulties of navigating sailing ships in the ice form a background against which stand out brilliantly the indomitable character of the commander, the courage, seamanship, and resourcefulness of the officers and men. Attention is here given only to discoveries.

This account is drawn from Wilkes' narrative, and quotations are from the reports of proceedings by the ships named.

January 16, 1840. "Appearances believed to be land were visible from all three vessels."*

*The *Flying Fish* was absent. The land signs are surmised to have been the loom of the Balleny Islands, discovered the previous January, but unknown to Wilkes.

January 19, 1840. "In the morning we (*Vincennes*) found ourselves in a deep bay. Land was now certainly visible, both to the south-southeast and southwest, in the former direction most distinctly. Both appeared high."

At three the same morning Hudson, in the *Peacock*, tacked to reach "An immense mass which had every appearance of land, seen far beyond and towering over an ice island. It bore southwest and had the appearance of being 3,000 feet in height, looking gray and dark, and divided into two distinct ridges throughout its entire extent; the whole being covered with snow."*

January 22, 1840. "The *Peacock* stood into the (Peacock) bay and saw the same appearance of high land in the distance. Sounded; bottom was reached at 320 fathoms; the matter brought up was slate-covered mud." (The bay, 20 miles deep, was surrounded by an ice-barrier.)

January 23, 1840. The *Vincennes* entered an indentation in the ice-barrier, which stretched unbroken along their course.

"The appearance of land was observed both to the eastward and westward. . . . Reached the solid barrier. This was a deep indentation in the coast, about 25 miles wide; explored it to the depth of 15 miles. This I have called Disappointment Bay; it is in latitude 67° 4′ 3″ S., longitude 147° 30′ E" (see map, page 308).

January 28, 1840. The *Vincennes* at 9.30 a. m. "had another sight of land ahead. (11 a. m.) We had the land now in plain view." A violent gale obliged the ship to put to sea.

January 30, 1840. From the *Vincennes* "land was in sight. At 8 o'clock reached the icy barrier and hove to. It was tantalizing, with the land in sight, to be again and again blocked out. . . . This bay was formed partly by rocks and partly by ice islands. . . . We approached within half a mile of the dark volcanic rocks, which appeared on both sides of us, and saw the land gradually rising beyond the ice to the height of 3,000 feet, and entirely covered with snow. . . . I make this bay (called Piner) in longitude 140° 2′ 30″ E., latitude 66° 45′ S.; and now that all are convinced of its existence, *I gave the land the name of the Antarctic Continent*. . . . Sounded and found a hard bottom at 30 fathoms."

Driven from Piner Bay by a gale, Wilkes continued his cruise along the unbroken ice-barrier to the westward. This, in despite of the official report of his medical officers, endorsed by a majority of his line officers, that "a few days more of such exposure . . . would reduce the number of the crew by sickness to such an extent as to hazard the safety of the ship and the lives of all on board."

February 2, 1840. The *Vincennes* in 137° 2′ E., 66° 12′ S., at 3 p. m., had "land in sight, with the same lofty appearance as before. No break in the icy barrier, where a foot could be set on the rocks."

February 6, 1840. From the *Vincennes* the barrier "still had the appearance of being attached to the land, and in one uninterrupted line."

February 7, 1840. The *Vincennes* "continued all day running along the perpendicular icy barrier, about 150 feet in height. Beyond it the outline of the high land could be well distinguished. At 6 p. m. we found the barrier suddenly trending to the southward. . . . This point I have named Cape Carr, in longitude 131° 40′ E., latitude 64° 49′ S."

February 8, 1840. The *Vincennes* at noon was in 127° 7′ E., 65° 3′ S. "At 7 p. m. we had strong indications of land; the barrier was of the former perpendicular form, and later the outline of the continent appeared distinct though distant."

February 12, 1840. From the *Vincennes* at 1 p. m.: "Land was now distinctly seen from 18 to 20 miles distant,

*Admiral John E. Pillsbury, U. S. Navy, conclusively proves (NATIONAL GEOGRAPHIC MAGAZINE, February, 1910, pp. 171–173) from D'Urville's reports that his discovery of Adélie Land was one day after Wilkes discovered Cape Hudson. D'Urville used the date of America, and Wilkes that of Europe, so that D'Urville's January 21 was in reality January 22.

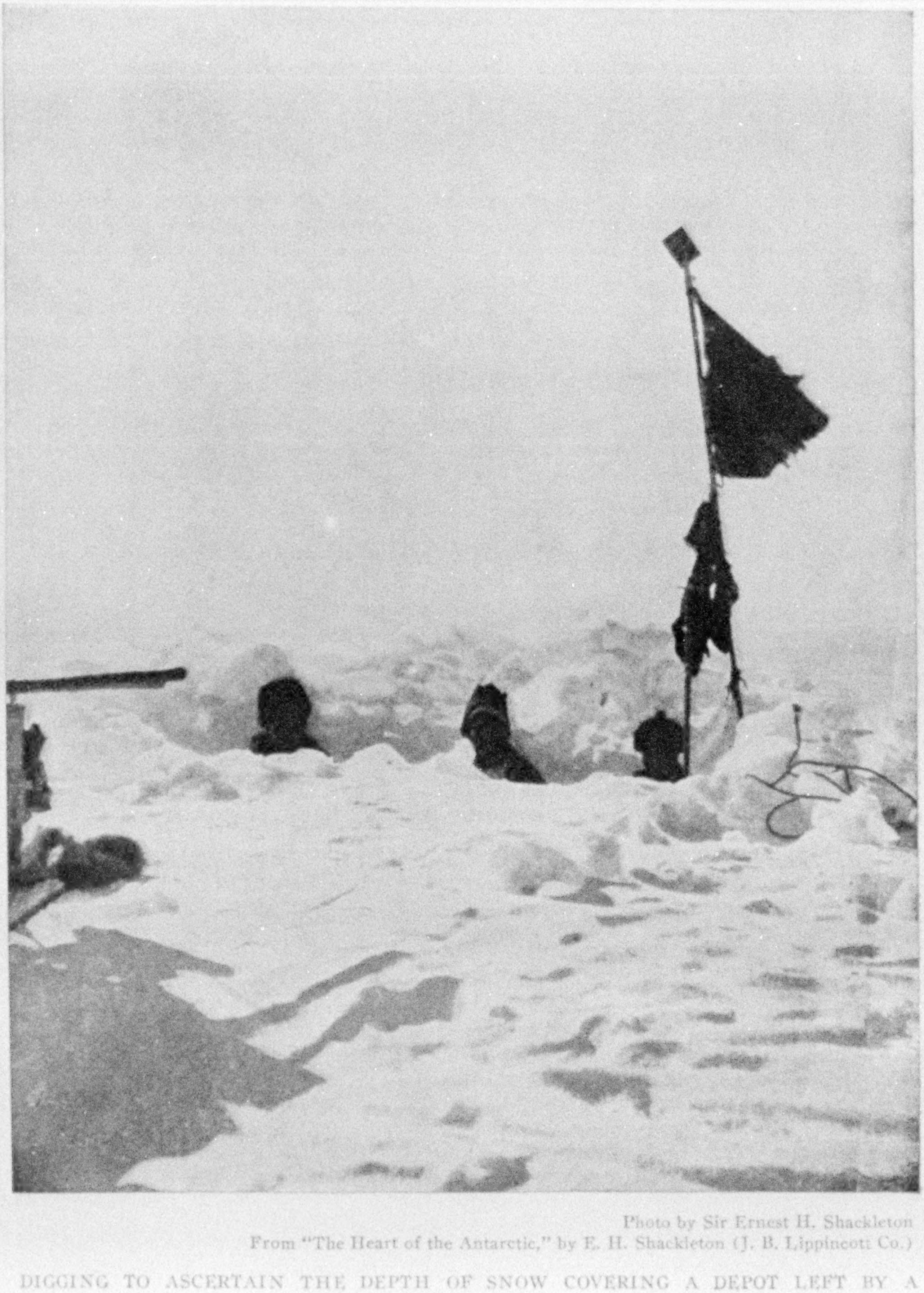


Photo by Sir Ernest H. Shackleton
From "The Heart of the Antarctic," by E. H. Shackleton (J. B. Lippincott Co.)

DIGGING TO ASCERTAIN THE DEPTH OF SNOW COVERING A DEPOT LEFT BY A PREVIOUS EXPEDITION

bearing from south-southeast to southwest—a lofty mountain range, covered with snow, though showing many ridges and indentations. . . . The barrier in places had the appearance of being broken up, and we had decreased our longitude to 112° 16′ 12″ E., while our latitude was 64° 57′ S. This put the land in about 65° 20′ S., and its trending nearly east and west."

February 13, 1840. The *Vincennes* "in the afternoon had the land ahead. At 6.30 p. m. it was judged to be 10 or 12 miles distant. The day was remarkably clear and the land very distinct. By measurement we made the extent of coast of the Antarctic Continent, which was then in sight, 75 miles, and by approximate measurement 3,000 feet high. It was entirely covered with snow. Longitude at noon, 106° 18′ 42″ E., latitude 65° 49′ 40″ S. . . . Hove to. Fortunately made a landing (on an ice island). We found imbedded in it boulders, stones, etc. There was no doubt that it had been detached from the land, which was about 8 miles distant."

Wilkes turned back when in about 97° 40′ E. longitude, 64° 1′ S. latitude, having traced for 1,700 miles a practically uninterrupted ice-barrier, bordering the coast of his Antarctic Continent.

The *Vincennes* proceeded first to Hobart Town, then to Sydney, which it reached on March 11. Lieutenant Wilkes immediately announced the discovery of a South Polar Continent to the Secretary of the Navy in the following letter, dated at Sydney, New South Wales, March 11, 1840:

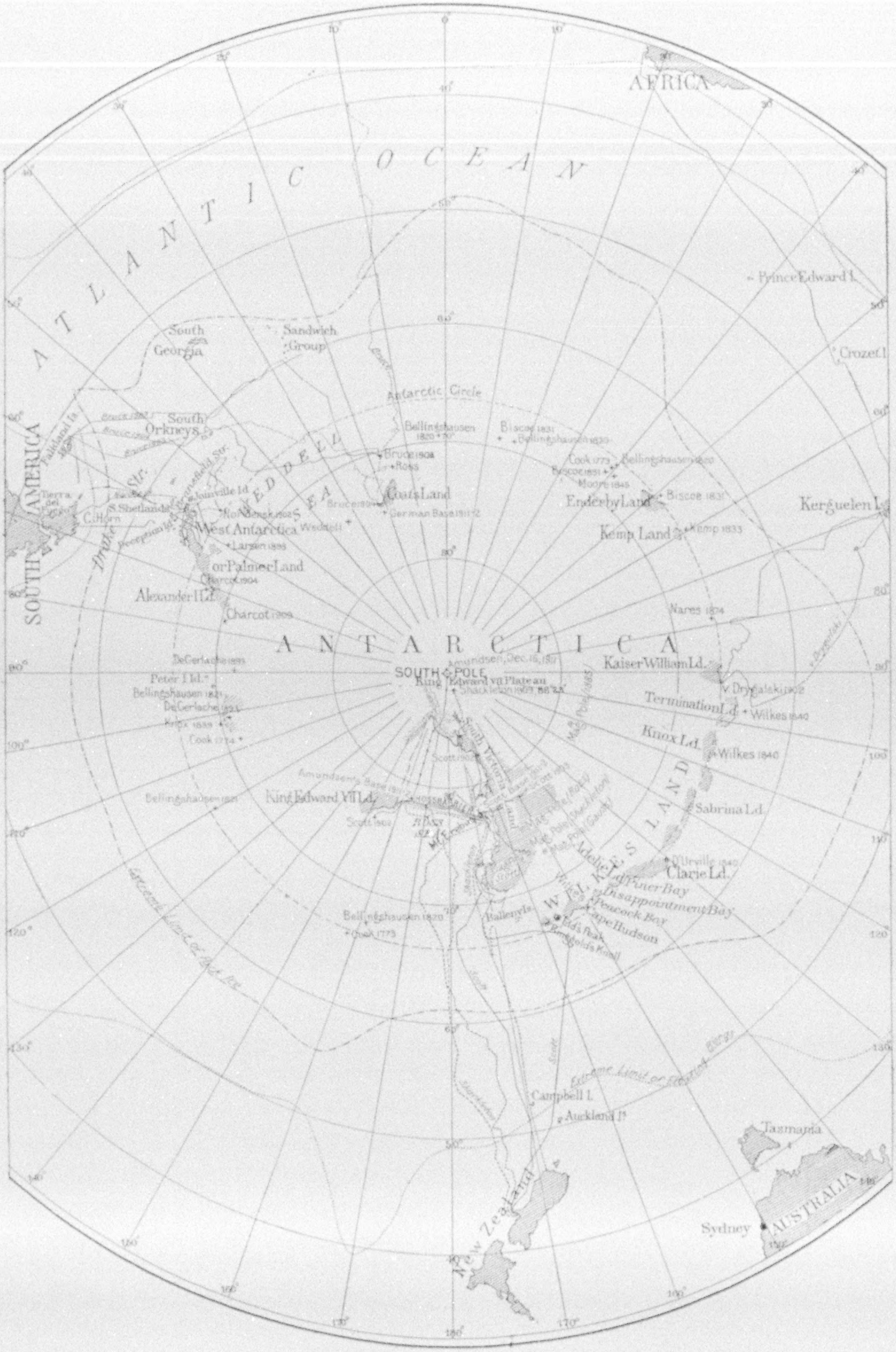
"It affords me much gratification to report that *we have discovered a large body of land within the Antarctic circle, which I have named the Antarctic Continent*, and refer you to the report of our cruise and accompanying charts, inclosed herewith, for full information relative thereto."

Mr. Edwin S. Balch, in his learned and exhaustive memoir on south-polar explorations (*Antarctica*, Phila., 1902) most concisely and justly summarized the geographical outcome of this cruise in the statement: "The cruise of Wilkes will remain among the remarkable voyages of all time. No finer achievement has been accomplished in the annals of the Arctic or of the Antarctic. With unsuitable, improperly equipped ships, amid icebergs, gales, snowstorms, and fogs, Wilkes followed an unknown coast-line for a distance exceeding in length the Ural Mountain range. It is the long distance which Wilkes traversed which makes the results of his cruise so important; for he did not merely sight the coast in one or two places, but he hugged it for such a distance as to make sure that the land was continental in dimensions. . . . It is only the exact truth to assert that the honor of recognizing the existence of the continent of Antarctica belongs to Charles Wilkes and to the United States Exploring Expedition."

DISCOVERIES OF WILKES DISCREDITED

On his announcement of the existence of the Antarctic Continent, Wilkes naturally expected an appreciative acknowledgment and high commendation—from his own countrymen at least. Instead his experiences were practically parallel with those of Columbus. Placed in arrest, he was tried for his commission under charges alleging cruelty, falsehood, grave misconduct, and of scandalous acts—such, for instance, as wearing the uniform of a captain while yet a lieutenant. After a long and exhaustive trial he was fully and honorably acquitted, though he suffered from the chagrin and temporary stigma incident to such official investigations. Though reëstablished in public opinion at home, he was subject to attacks and innuendoes from abroad to the day of his death.

By extending an unexpected favor Wilkes gained an enemy. Contrary to his stringent official instructions, he sent to Capt. J. C. Ross, R. N., then engaged in Antarctic research, a chart and letter showing his own experiences and discoveries. This officer of the Royal Navy not only reflected severely on Wilkes (Ross: "Voyage to the South Seas," 1847, I:272, 280, 285-299), but omitted all of his discoveries from the admiralty chart, on which appeared those of every British sealer.



OUTLINE MAP OF ANTARCTIC REGIONS, SHOWING EXPLORATIONS OF THE AMERICAN DISCOVERERS OF THE CONTINENT, PALMER AND WILKES (SEE PAGES 300, 304, 305, AND 307)

His brilliant successes in Arctic and in Antarctic explorations place Ross in a class by himself in polar annals. But unwisely he derogated from his glory by unjustly attributing to Wilkes a dishonorable intrusion on this field of work in 1840. As Wilkes was acting under official orders of 1836, this was clearly an unfounded aspersion which ultimately resulted in the condemnation of Ross' action by competent critics in England, France, and America.

Wilkes, in his "Synopsis of Cruise," 1842, clearly says that on the chart sent to Ross was "laid down land not only where we had determined it to exist, but those places in which every appearance denoted its existence," as was natural in a chart for information. Ross declined this explanation, and then unfortunately charted himself the Parry Mountains, which are non-existent (Scott: "Voyage of the Discovery," I: 171).

Thus it was Ross, not Wilkes, who appropriated other men's discoveries, for three of Ross' new islands are only three peaks of Balleny's Sturge Island (Scott: "Voyage of the Discovery," II:389).

The discrediting of Wilkes by standard English authorities has been bold, open, and persistent for 70 years, though occasionally in late years some able, impartial expert, like the Scotch scientist, Sir John Murray, has expressed belief in him.

The *Encyclopedia Britannica*, 9th edition, 1875, says of Wilkes' discovery of the southern continent: "As a portion of it had already been seen by Balleny and the rest of it has since been proved not to exist, the claim has not been admitted." Balleny's mate, John McNab, however, when in 65° 10′ S., 117° 4′ E., on March 3, 1839, records in his journal, "To the southwest the ice was quite fast, with every *appearance* of land at the back of it, but the weather coming on thick." And on this indefinite statement British geographers locate Sabrina Land and declare it to be *known* land.

In 1897, in his anniversary address to the Royal Geographical Society, its president, Sir Clements Markham, claimed that Sir James Clark Ross, R. N., "made one of the greatest of geographical discoveries of modern times, amid regions of perpetual ice, *including a southern continent*."

In 1899 Markham read before the International Geographical Congress at Berlin a paper, "The Antarctic Expeditions," in which he omitted the names of Wilkes and Palmer. Moreover, he proposed to divide the Antarctic region into four quadrants, and to name each quadrant after an eminent Britisher. He eliminated Wilkes' discoveries and proposed to call the region which Wilkes had explored "Victoria Quadrant," thus ignoring the prior and brilliant work of the great Antarctic French explorer, Dumont D'Urville, as well as that of the American.

The Antarctic Manual, 1901, compiled for the British National Antarctic Expedition of that year, omits from its official chart all of Wilkes' discoveries except Knox Land.

The 30-inch British terrestrial globe, by W. and A. K. Johnson, corrected to 1903, omits all of Wilkes' work.

Capt. R. E. Scott, R. N., in his "Voyage of the Discovery," 1905, states of his own cruise: "Thus once and for all we have definitely disposed of Wilkes Land," and so omits it from his chart, retaining Sabrina Land, however, of Balleny.*

With unconscious inconsistency Scott admits that "Wilkes' soundings still remain as a guide to the limit of the continental plateau," thus indirectly assuming that Ross discovered the austral continent.

Dr. Mill, "Siege of the South Pole," 1905, indefinitely admits that Wilkes discovered something, but does not directly name any land. Ignoring entirely the official chart of Wilkes, Mill gives a misleading impression by reproducing without explanation the preliminary chart sent to Ross (Balch: Antarctica, 1902). Sir Ernest Shackleton accepts Scott's erroneous statement about sailing "over part of the so-called Wilkes Land," "The Heart of the Antarctic," page 229, and omits it from his chart (except Knox

*Mr. Edwin Swift Balch, in his "Why America Should Re-explore Wilkes Land," p. 39, etc., shows that Scott never reached Wilkes Land.

Photo by Beverly B. Dobbs, Nome

THE NOME EXPRESS READY TO START

The records made by dog teams in Alaska are extraordinary. On one occasion recently, Mr. A. D. Nash, of California, went from Dawson to Nome, a distance of 1,400 miles, in 26 days of travel, or an average of 44 miles a day. He made a trip the same year from Candle Creek to Neukulk, a distance of 102 miles, in 17 hours, hauling a lady passenger and the mail. In the races of the Nome Kennel Club of Alaska the winning dog team has made the 412-mile course from Cripple Creek to Nome in 82 hours and 2 minutes, or an average of 121 miles a day. John Heston, with his own dog team, traveled from Valdez, Alaska, to Cape Nome, a distance of over 1,100 miles, in 23 days, or an average of more than 49 miles per day.

Photo by Beverly B. Dobbs, Nome

A RACING TEAM: CAPE NOME, ALASKA

Amundsen, on his journey to the South Pole, averaged 15½ miles per march. On his return he averaged 22 miles, on one march making 31 miles. No previous explorer in the south has made distances like these. Peary's average on his return from the North Pole to land was 25.6 miles. On one of his earlier expeditions Peary made the distance from Cape Wilkes to Cape D'Urville, a distance of 65 miles, in one march. He repeatedly made distances of 40 miles in one march, and in the winter of 1899-1900 traveled from Etah to a point in Robertson Bay, 60 miles distant, in less than 12 hours. On the Greenland ice-cap he once averaged 20 miles a day for 25 successive marches, and on another occasion he averaged 30 miles a day in seven successive marches. Macmillan and Borup, members of the last Peary expedition, returning from Cape Morris Jessup to the *Roosevelt,* made the distance of 250 miles in eight marches, an average of over 31 miles a march.

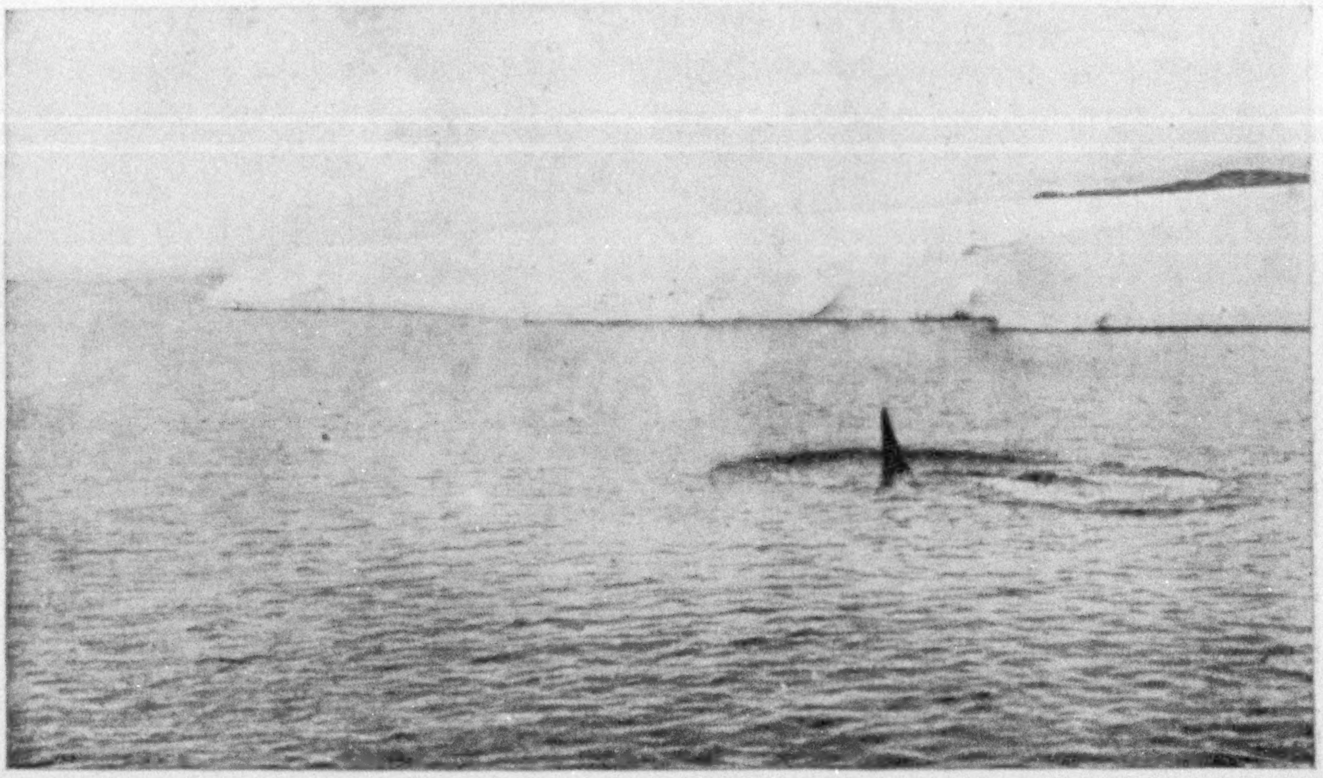


Photo by Sir Ernest H. Shackleton
From "The Heart of the Antarctic," by E. H. Shackleton (J. B. Lippincott Co.)

KILLER WHALES SOUNDING OFF THE GREAT ICE BARRIER

Land), but sympathizingly adds, "The question of the existence of this land in any other position had been left open."

The first break in nearly fourscore years of misrepresentation in British standard works is in the *Encyclopedia Britannica,* 11th edition, 1911, where Dr. Mill admits "there can be no doubt that Wilkes saw land along the line where Adélie Land, Kemp Land, Enderby Land are known to exist, even if the positions he assigns are not quite accurate."

THE CONTINENT OF ANTARCTICA

Probably no other standard authority denies the existence of a south-polar continent save the *Encyclopedia Britannica,* 11th edition, 1911, which mentions "Australia, the *only* continent entirely in the southern hemisphere." The 10th edition, 1902, said: "The hypothesis of a great Antarctic continent, or continental archipelago, continuously covered by an ice-sheet, is confirmed by the observations of recent explorers, but the evidence is not yet direct or conclusive."

Nearly 40 years since, a distinguished scientist, born on the continent of North America, Sir John Murray, of *Challenger* expedition and fame, and one of the eight honorary members of the National Geographic Society, considered the mooted extent of south polar lands and finally outlined their logical continental form as the continent of Antarctica—a fitting and largely accepted name. This great feat of constructive geography depended on a few-score handfuls of oceanic ooze from the south-polar seas and scanty bits of rocks from scattered lands.

Whatever doubts remained as to the accuracy of Murray's deductions have disappeared since the cumulative discoveries of Amundsen, Borchgrevink, Bruce, Drygalski, Gerlache, Larsen, Nordenskiöld, Scott, and Shackleton. Indeed, a German scientist has calculated that Antarctica is considerably greater in area than Europe, and that the average elevation is more than double that of Asia.

CONCLUSION

It has been shown that the primary discovery of Antarctica and its definite recognition as a continent were the outcome of American energy and prescience. It is therefore the duty of the 120,000 members of the National Geographic Society to create a public sentiment that shall honor in our literature and in our history the achievements of Nathaniel B. Palmer and of Charles Wilkes.

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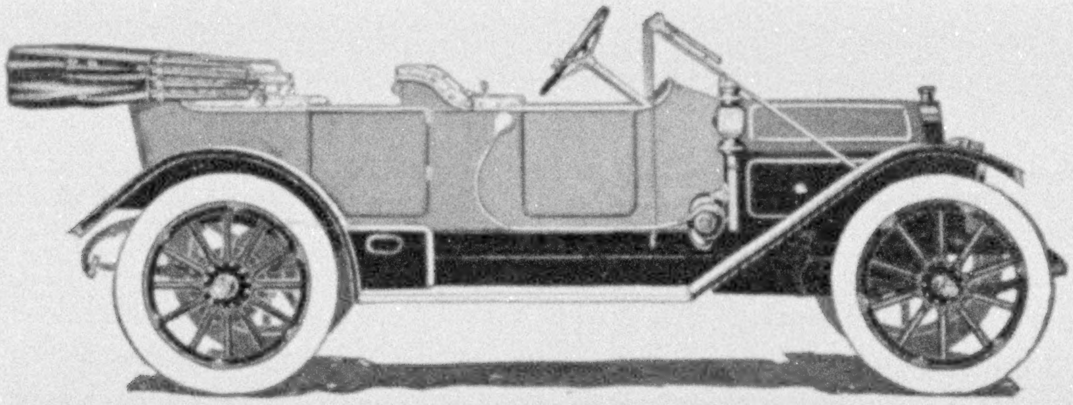

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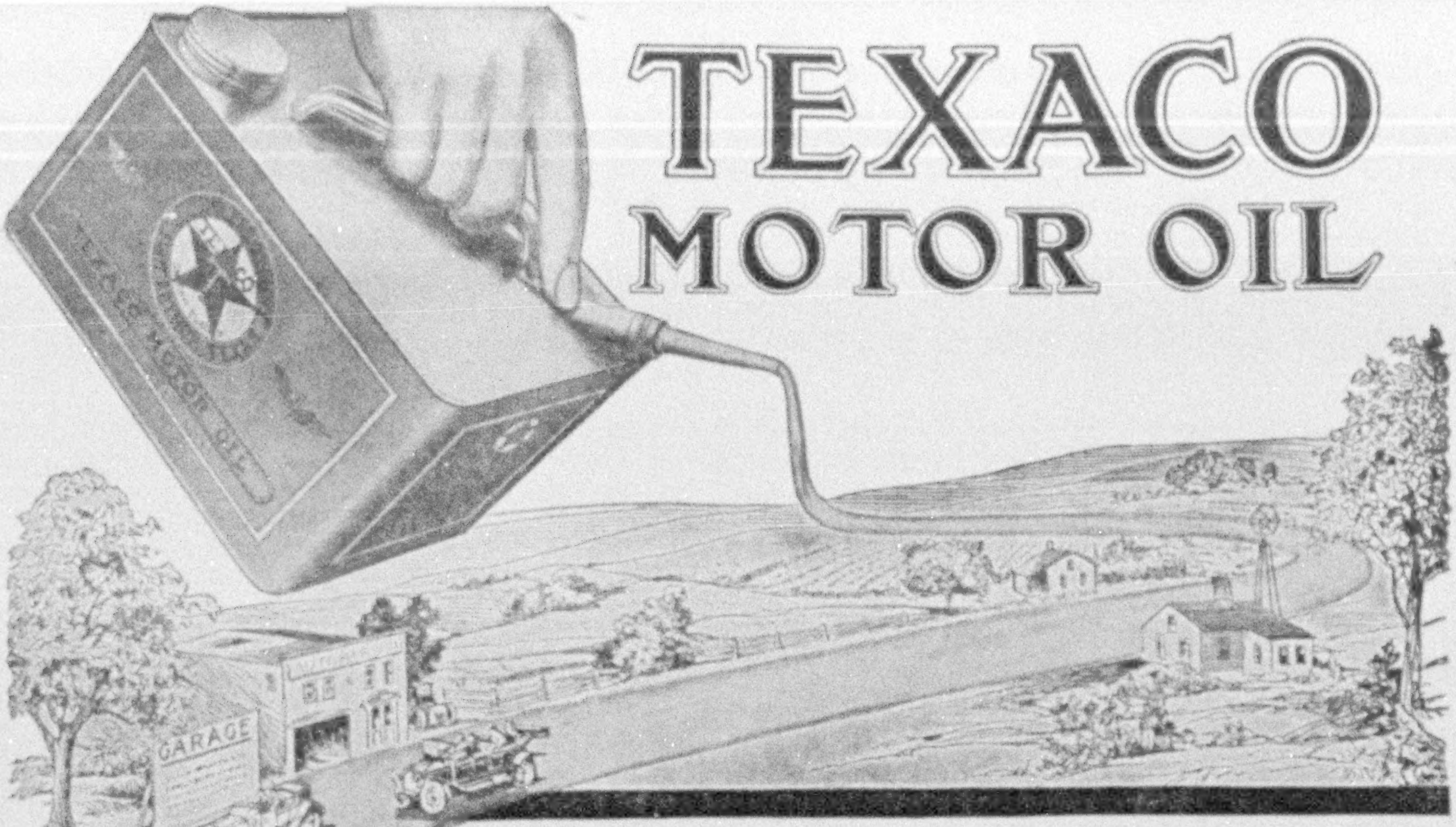

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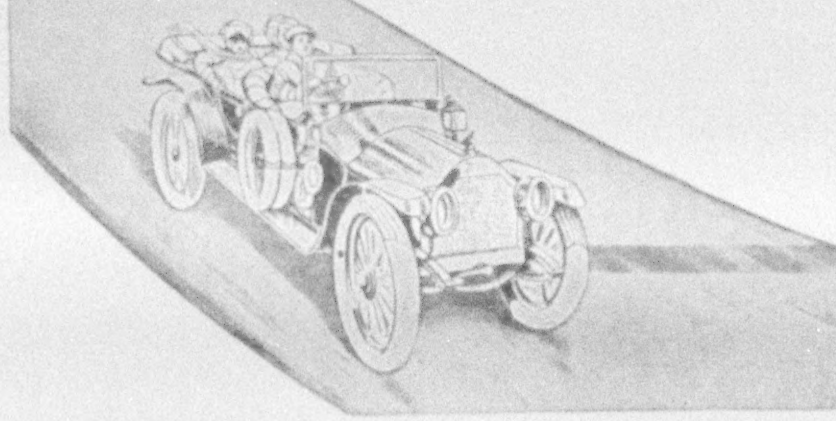

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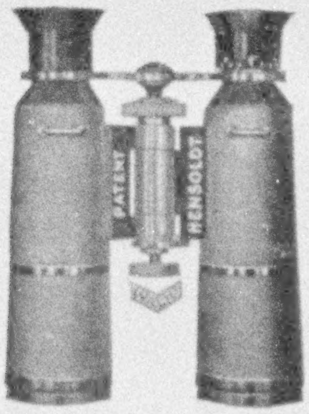

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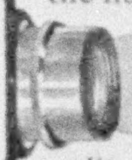

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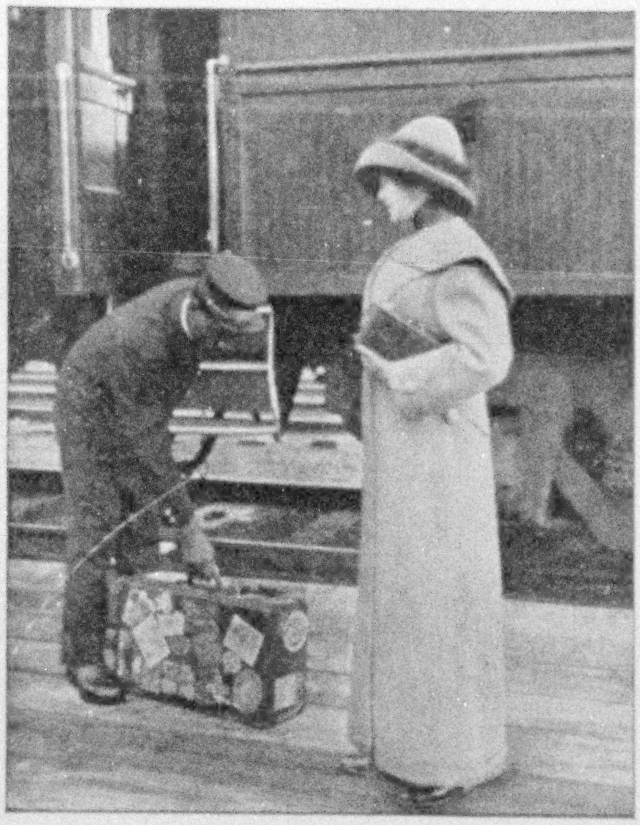

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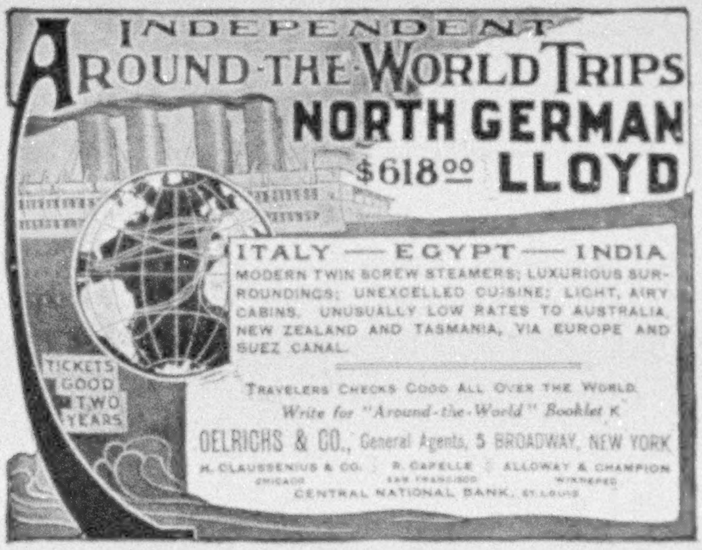

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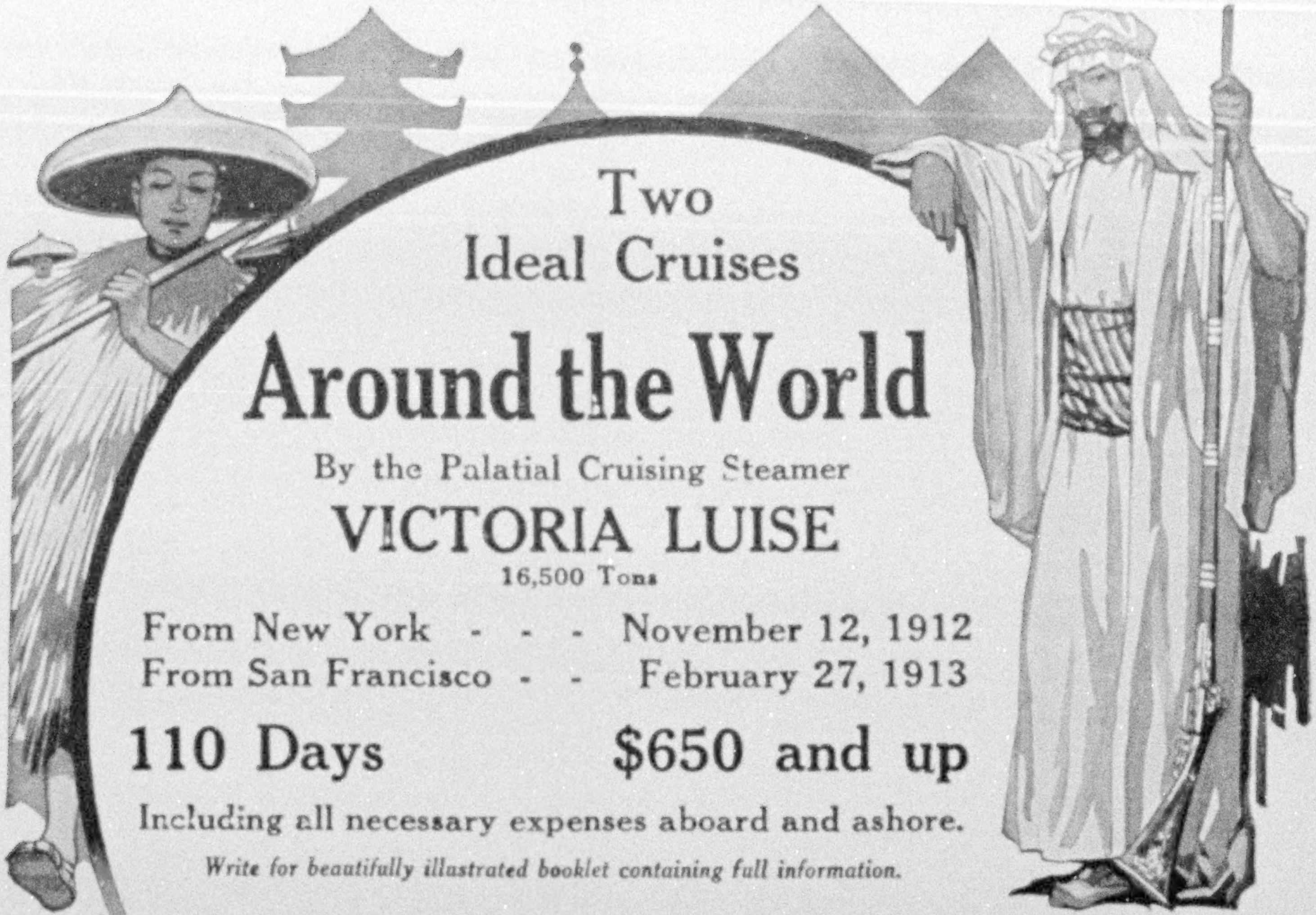

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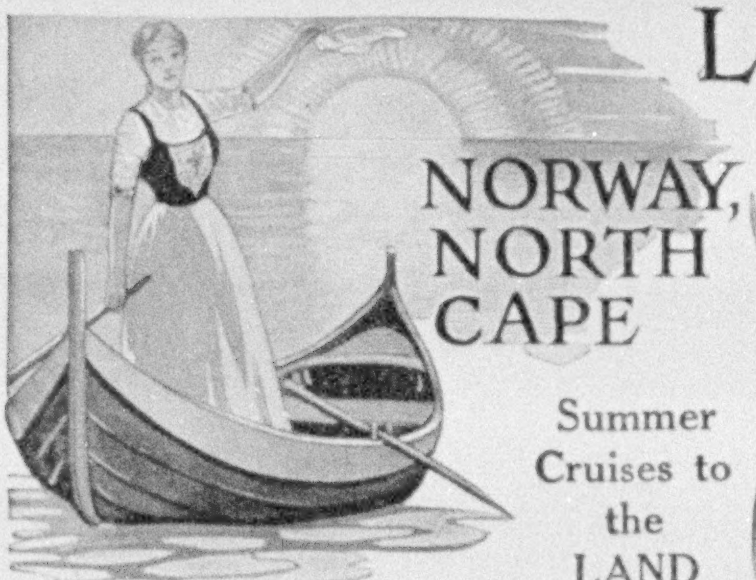

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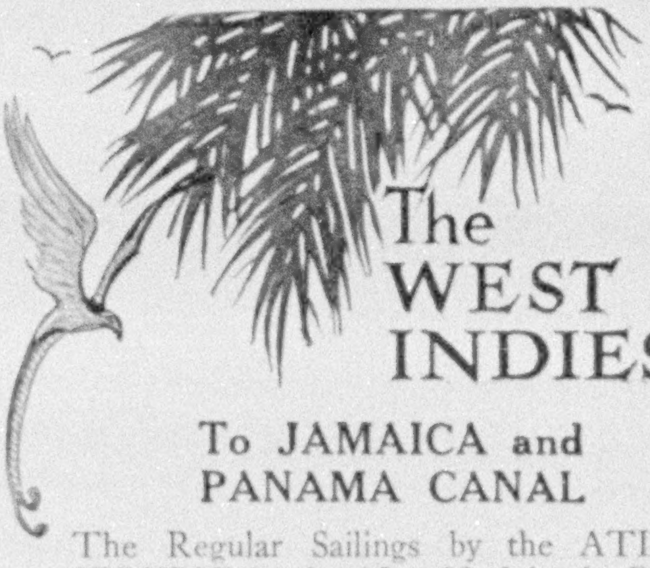

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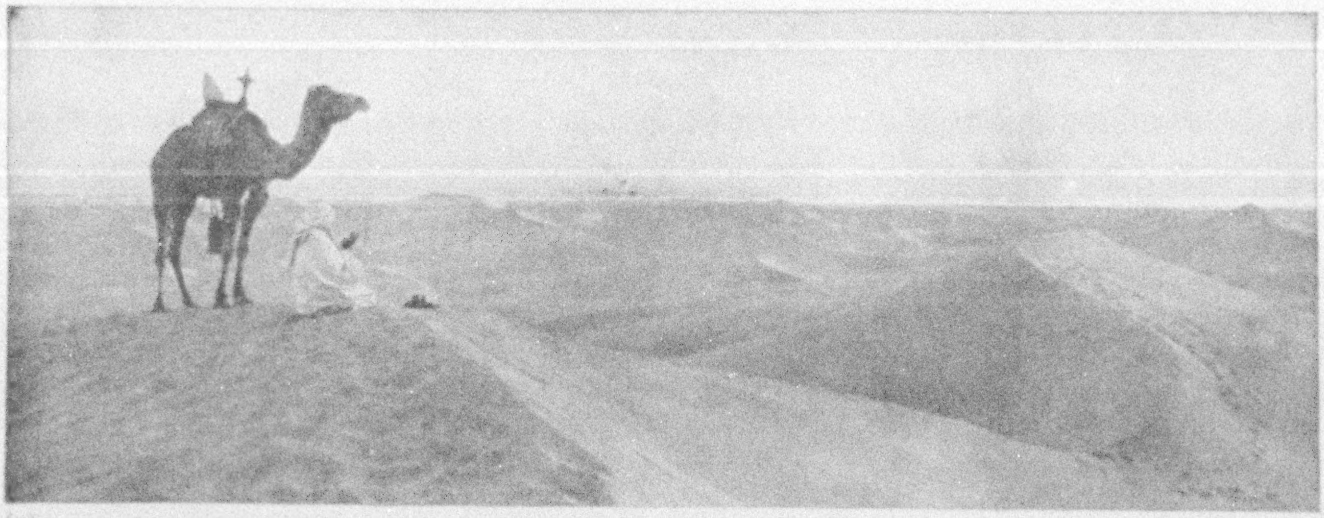

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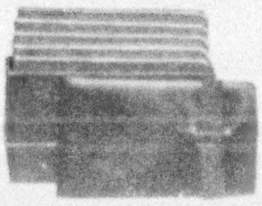

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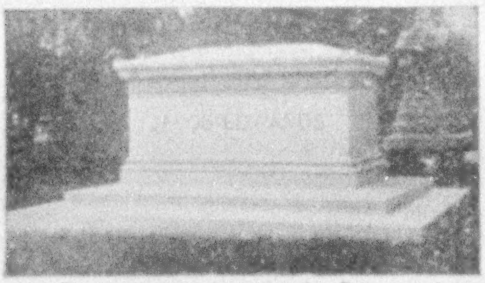
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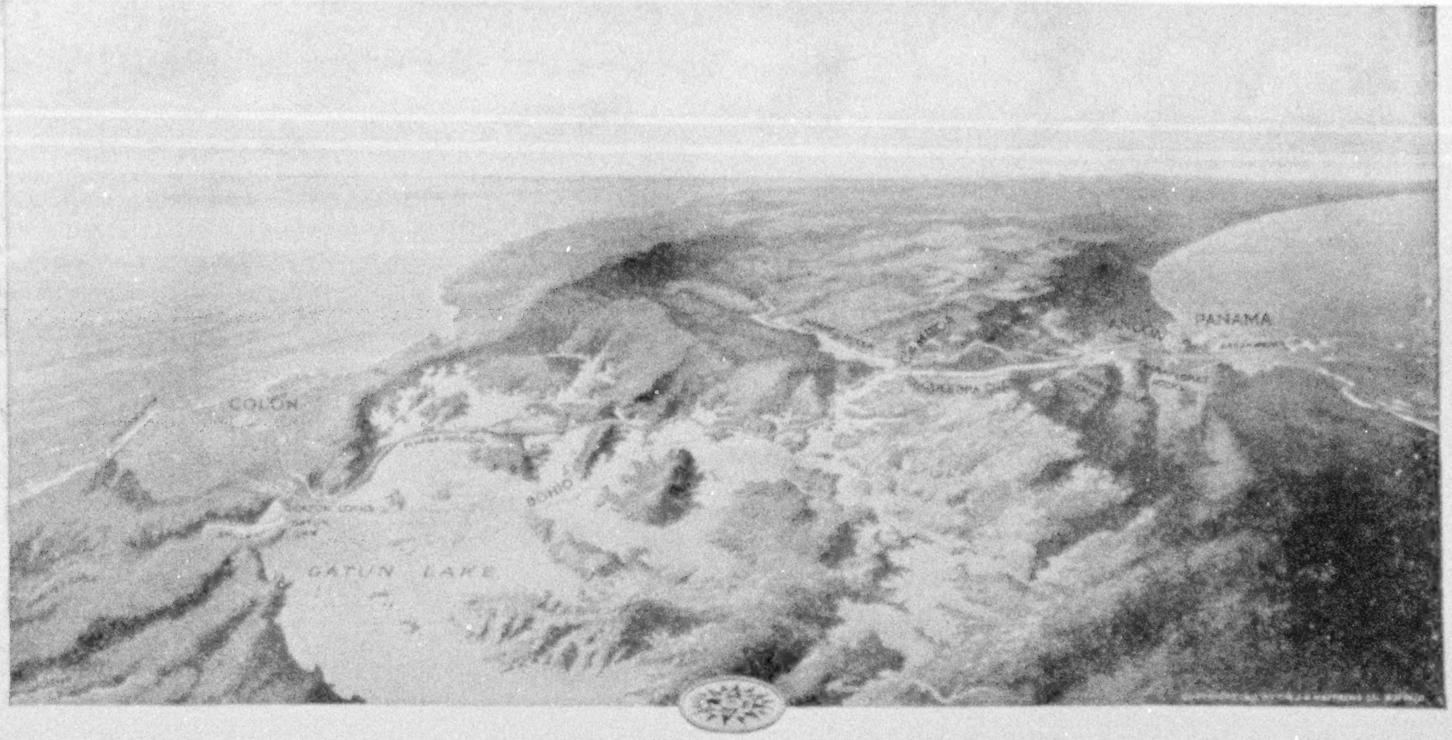

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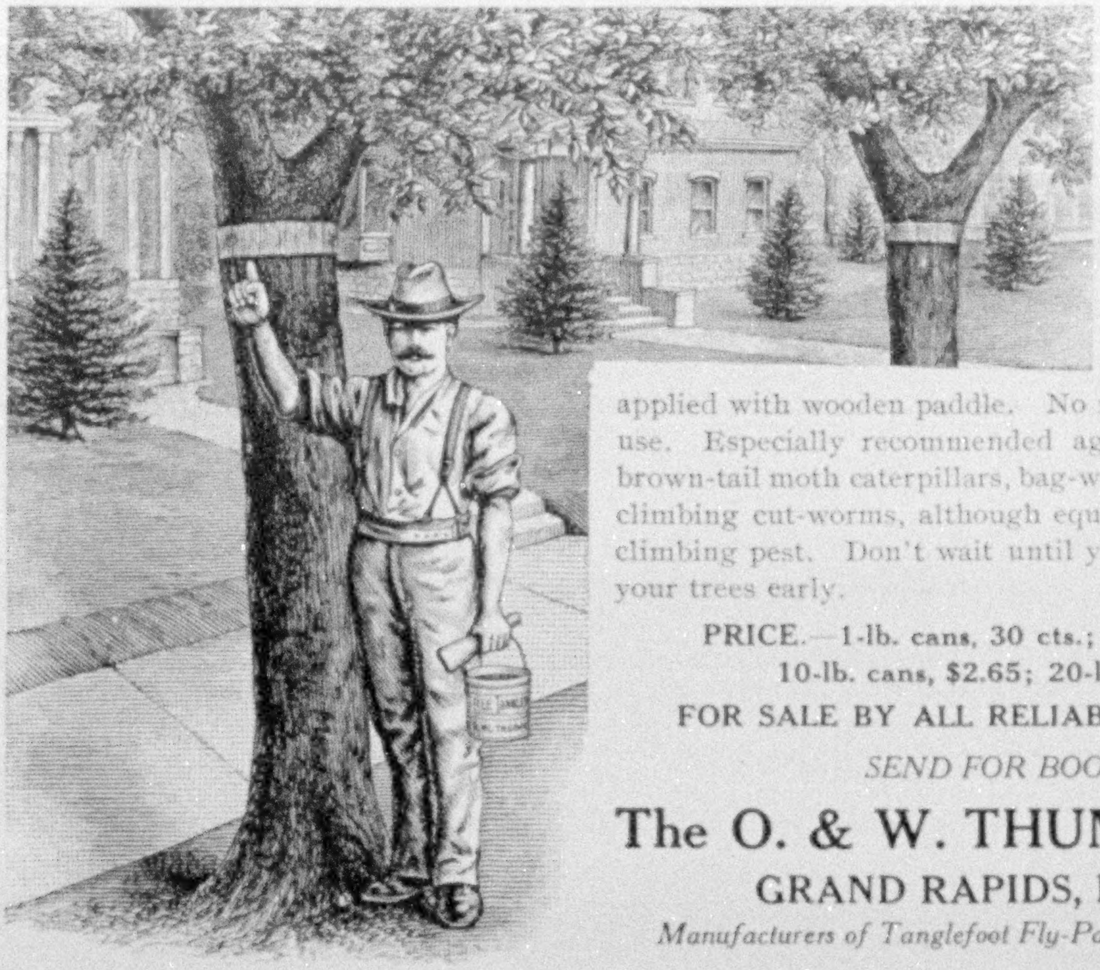

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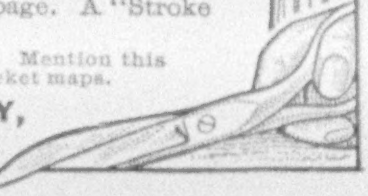

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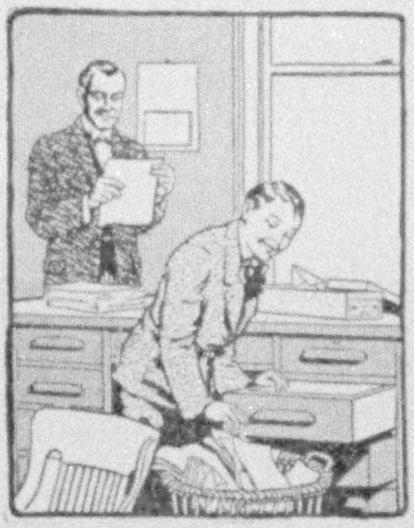

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